

My general impression is that mixed flocks are more common on the Pico de Espejo here than near Quito, but probably somewhat less common than in Chiriqui.

Species include Black and White Warbler, Slate-throated Redstart, White-speckled Redstart, M. cyanocephala, probably a variety of Tangaras (altho I am not sure that I have yet seen a flock with the latter that did not also include Diglossini) plus a variety of flycatchers, hummingbirds, and fernariids (s.l.). Possibly also BCBT's and squirrels.

SEE ALSO NOTES ON MIXED DIGLOSSINI

September 19, 1964  
Teleferico #1 & above

After having seen a few more mixed flocks, I have come to few tentative conclusions about them.

There are really 2 main types (or sub-types) here. Mixed flocks and tree flocks.

Mixed flocks include the "Quito-Basilentemus", the "gray-headed Basilentemus-type" (No. IX on list), the two Atlapetes, Andean Sparrows, as well as various fernariids & hummingbirds. This is the type of mixed flock most often joined by adult ♂ Albes (and Buff-throats).

Within such flocks, the 2 Basilentemus types seem to be leaders.



2

while the PL *Atlapetes* is definitely a follower (in much the same way as the Yellow-throats in Chiriquí).

Tree flocks include Black and White Warblers and other wintering N. American warblers, *Thraupis cyanocephala*, various *Tangara*-like tanagers (at lower altitudes), Slate-throated and White-speckled Redstarts (the White-speckled may be a bird of relatively high altitudes, just like the Collared in Chiriquí), as well as various furnariids and hummingbirds (presumably not always the same species as with the wet flocks).

This is the type of flock most often joined by *cyanea*.

I don't know who are the followers and who are the leaders in this type of flock.

I also don't know if the two types of flocks coalesce regularly or not.

The role of BCBT's may be significant in this connection. They seem to be primarily tree flock birds, but they may come relatively low more frequently than most of the other members of the tree flocks. But it still remains to be proved that the local BCBT's are nuclear (or even regular members of mixed flocks) !!!

September 21, 1967  
Paramo La Negra

Saw an interesting flock this morning. 7:00 a.m. 9350 ft. In alpine scrub, just below paramo itself. Nucleus composed of 3 PL *Atlapetes* and 1 Yellow-belly *Poecilothraupis*, who stayed together as long as I watched the flock (at least 3 mins.). This



glor  
nucleus briefly joined by single Andean Sparrow and single gloriosa.

September 22, 1962  
Road to La Azuleta

See today's notes on Chlorospingus & Atlapetes

I am now sure that the WM Atlapetes is not associated with mixed flocks nearly as frequently as is the PL Atlapetes.

I think the local BCBT's are neither passive nuclear nor gregarious among themselves.

September 24, 1962  
Paríamo La Negra

See today's notes on Mixed Diglossini!

Two aspects of the mixed flocks here seem to be most significant:

(1) Mixed flocks are common here (in spite of the fact this seems to be the height of the breeding season). This would suggest that the environment here is "unpoisoned" in much the same way as Central America (if this is not actually part of the Central American region).

(2) Certain species which show specialized inter-specific reactions facilitating the formation of mixed flocks do not seem to do so here (i.e. the BCBT, the BT?). Certain species which do not show any signs of inter-specific gregariousness near Quito do



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*Gen* seem to do so here (i.e. the common *Banisterius*, several species of *Diglossa*, *Thraupis cyanocephala*). This might suggest that, although the habit of associating in mixed flocks may help a species to spread, it is often disadvantageous after the species has occupied a new area. This, in turn, would suggest that a species will usually have to spread to new areas in a hurry, once it has developed the habit of associating in mixed flocks, before the habit is selected against and the chance to spread is lost.

September 26, 1962  
Paramo La Negra

See today's notes on Mixed Diglossini

September 27, 1962  
Above Quasca

Ca. 9:15 this morning I came across a large mixed flock. The most brilliantly colored I have ever seen. Including bright red, orange, yellow, white, gray, black, brown and blue!

The only colors missing were greens, including olive.

*Th* The birds definitely identified as being associated with this flock were: 3 inds. of one *Atlapetes*-like species (no. ~~XV~~); a pair of another undoubtedly *Atlapetes* species (no. ~~XIV~~); a pair of *Trochiloides*; a pair of brilliant blue and orange "tanagers" (no. ~~XVI~~).



Feb 32 ✓  
Ruf 32 ✓  
33 ✓  
34 ✓  
a pair of Lafs; 1 or 2 Rufs (if 2, they were a pair); and one  
wren. The flock also included at least 1 blue and yellow-  
bird which was probably a Dabunia. Probably also included  
a pair of PL Attapetes.

Feb 32 ✓  
Ruf 32 ✓  
33 ✓  
34 ✓  
This flock was moving up hill, along both sides of the  
automobile road. Finches and tanagers apparently leading. As far as  
I could tell, the presumed Dabunia, the Attapetes XIV, the Fin-  
bellies, the Blue & Orange Tanager XVI, (and the PL Attapetes, if  
present) were in the vanguard, apparently leap-frogging over  
one another at random. Also flying back & forth across road.  
The presumed Attapetes, no. XV, were definitely behind the van-  
guard most of the time. The Lafs were around the XV's and/or  
the Rufs most of the time. They certainly stayed with the flock  
for at least several minutes. The Rufs were always at the rear.  
They definitely stayed with the flock as long as I could see it.

All the members of the vanguard moved consistently in  
the same direction. And the other members of the flock were de-  
finitely following at all times. This was a very well integrated  
flock.

The vegetation through which the flock was moving  
was alpine scrub. Very thick. Several hundred feet below  
the nearest edge of Páramo. Scrub possibly a little drier than  
higher scrub. Contained few or no tubular flowers. All the me-  
mbers of the flock seemed to be feeding on insects. Not fly catch-  
ing. Picking insects off leaves, probing crevices, etc.

The Finbellies, the XVI's, and the presumed Dabunia type  
ranged from the tops of small trees (possibly 20 ft. above ground)



(6)

to low scrub only a few feet above ground. Probably usually in  
mudde. The Attapetes types ranged from approximately 5 ft to  
only a few inches above ground, in a variety of bushes and shrub-  
bery. The diglossines did much the same thing, except that  
they never went so low (probably never lower than  $1\frac{1}{2}$  ft.  
above ground).

This flock was not very noisy. All or almost all the  
birds uttered "CN"s. A great variety of "Trit"s. The only sp  
ecies known to have "sung" in the flock were the Fire bellies  
and Attapetes XIV. The Fire bellies uttered several phrases,  
at long intervals. Largely or completely composed of "Ja-auh"  
type notes. The XIV's also sang at long intervals. Their loud  
clear, wren-like, song (possibly being used as "greeting" when  
one bird re-joined its mate).

A Dabuna certainly sang, once (several phrases), while  
I was watching the flock; but I don't know if it was the  
bird that had been in the flock (if there was one), or, if so, if it  
was still in the flock when it sang.

The most peculiar feature of the flock was that it seem-  
ed to be largely or completely composed of followers. No leaders.  
No passive nuclear species. This is peculiar. It might seem to  
contradict my suggestion that mixed flocks develop from an  
original association between a passive nuclear species and one or  
more active nuclear or attendant species. But I wonder if this  
flock might represent an early stage in the degeneration of an  
"association" (in process of being transformed from something like  
the mixed flocks near Mérida to the group of un-associated spe



ules near Quito)? If it is sometimes advantageous for a previously "allo-gregarious" species to become non-allo-gregarious, after having occupied a new area; then it is logical to suppose that selection pressure would affect passive nuclear species more strongly (and probably earlier) than active nuclear species. Active species can regulate their associations with other species more easily than can passive species. So one might expect passive nuclear species to become non-allo-gregarious before their associated active nuclear and attendant species. The latter would then be in state comparable to that of a mature stranger fig after its original support has disappeared. The flock seen this morning may represent this hypothetical stage.

(If one wanted to select the local species which once played the passive nuclear role in this particular association — there is always Baileuterus nigrocapitatus available.)

I lost sight of this flock after approximately 20 minutes when a parrot-like bird appeared and asked loud questions. I think the flock turned at right angles, leaving the road, and continuing up hill more directly.

September 30, 1962  
Above Quasca

This morning I came across a mixed flock twice. In exactly the same area as yesterday's flock. Obviously essentially the "same" flock both times today and yesterday.

Flock first seen 7:35 a.m. At this time, I saw a pair of



*PR* *Attapetes*, <sup>III</sup> 3 "Attapetes" <sup>IV</sup> *XL*, 2 *Ruf*, and 1 *Tit* all more or less together. Soon joined by 1 *Laf*.

Just after first seeing flock, I heard a *Fire-belly* "Ja-ah" pattern about 20 yds ahead of the other birds. If this *Fire-belly* (or, more probably, pair of *Fire-bellies*) was really associated with the other birds, then the latter were following the former.

The *PR*'s were certainly leading the other birds. They were quite noisy, uttering lots of "greeting" vocalizations.

The other 4 species seemed to be following the *PR*'s, without ranging themselves in any stereotyped order. All of them were silent or uttered only weak "CN"s.

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

All the visible birds of the flock moved more or less steadily in the same direction. In low scrub to small trees, usually fairly low.

*Tit* of this flock eventually went down hill. But not the *Laf* or the *Fire-belly* (ies). I heard both *Fire-belly* and *Laf* song at approximately the level the flock had been after the flock had left. The *Laf* and *Fire-belly* (ies) were not together when they sang, and did not sing at the same time.

at 8:35. I came across what appeared to be scattered remnants of the same flock. First I saw an apparently single "Blue & Orange" *Tanager* (no. *XL*). All it did was utter "Trit" CN's. Moving up hill thru tops of small trees. Quickly disappeared. A few moments later, I heard *Fire-belly* song from the approximate area to which Blue and Orange had gone. Then heard 1 brief



14 burst of Baileymorus nigrocrinitatus song, from area near me, considerably down hill from where Blue & Orange and Fire-bellies were. Then a pair of Rufs appeared, moving steadily uphill, in the presumed direction of the Fire-bellies. Paused by nigrocrinitatus area, but I don't think they were aware of the latter. Went past me to feed in tree up hill. One or both Rufs did a lot of singing. Then they flew back down hill, in the direction from which they had come.

Ruf All the time the Rufs were around, the nigrocrinitatus (there were 2 of them, as I saw at this point) were absolutely silent. As soon as the Rufs had gone, they uttered quite a lot of loud songs and moved about quite actively. They were much more conspicuous than than any nigrocrinitatus I have seen around here at any other time!

16 The nigrocrinitatus gradually quietened or moved away (the former I think). Then a few minutes later I heard a burst of PR song from the area toward which the Rufs had gone earlier!

17 All this would suggest that I saw the flock splitting. The Fire-bellies and the Blue & Orange went up hill. The PR Atlapetes stayed down hill, making no effort to follow the tanagers. The Rufs started to follow the tanagers, but then we nt back to re-join the RP's. The fitts and no. 21's presumably stayed with the RP's all the time.

This would suggest that the large mixed flocks around here are composed of 2 sub-groups: (1) tanagers, i.e. the Fire-belly, the Blue & Orange, and, possibly, Dulcinea; (2) The Atla



(10)

*gem* peter-type finches and the Dylamini. The two sub-groups only come together because RP's tend to follow the tanagers.

The roles of the species would seem to be as follows:

I. B. nigrocristatus. The local individuals of this species are obviously trying to keep out of mixed flocks. It is most significant that the birds observed today were right in the middle, between the two halves of the split flock, but only became conspicuous after the two halves were far enough apart that they themselves (the nigrocristatus) were essentially alone.

NOTE. The nigrocristatus near Quito could afford to be noisy because no one joined them. The nigrocristatus near Merinda apparently could afford to be noisy because they didn't mind being joined.

*fitti* II The fitti and the XI's seem to be regular followers of the PR's. Probably regular attendants, rather than active nuclears, as they are so silent while with flock.

*Ruf* *Laf* III The Rufts are probably occasional attendants in the PR sub-group flocks. Possibly regular. The Laps are certainly occasional attendants in the same flocks. *IV*

IV The White-bearded Flycatchers (no. XVII) seem to be regular attendants upon any kind of flock, both mixed and previously non-mixed (e.g. flocks of Andean sparrows), that enter their own territories.

V The Fox-belly may be an "occasional passive nuclear" species.



us", being followed, at least by RP's, whenever possible or convenient. Five-bellies are not, however, usually associated with mixed flocks. SEE TODAY'S NOTES ON POECILETHRA UPIS.

(The Blue & Oranges might be anything. Perhaps the same as the Five-bellies. Perhaps active nuclear or attendants.)

VI. The PR is the great problem. Certainly functioning as passive nuclear here and now. (The fact that its song is so similar to those of the diglossines might even suggest that it is highly specialized, or at least specializing, to enhance its passive nuclear capabilities.) But comparative data would suggest that it was once an attendant species or (possibly subsequently) an active nuclear species. Its position here is probably very similar to what the position of the Yellow-thigh would be in Chiriqui if the BCBT dropped out of the mixed mountain association. It would be interesting to see if the PR reverted to another status here, if a more typical passive nuclear (i.e. "auto" - gregarious) species appeared.

(The status of the PL's here is still quite obscure.)

October 23, 1962  
Mountain above Bogotá.

*Open*  
Watched birds here both in morning and afternoon  
Surprisingly few mixed flocks. In spite of the fact that  
Laps, Ruf, Humers, Cys, Fivebellies, PL Attapetes, PR Attapetes,



Dubouas, B. superciliosus, and White-bellied Flycatchers (XVII) all occur in area (Species checked seem to be common).

The scarcity of mixed flocks here may be due to the fact that the PR Attapetes seem to be rare.

This might suggest that the absence of mixed flocks in the Quito region may be due to the absence of nuclear species — not to a general reduction of inter-specific gregarious tendencies in other species.

Hummer The only definite mixed flock seen today was formed when a single Hummer joined a single, silent, PR Attapetes (see today's notes on mixed Dylonini). The fact that PR was silent might suggest that its mere appearance, per se, is attractive.

I heard PL Attapetes at dawn, but never saw any birds. I am beginning to feel fairly certain that this species does not usually play a significant role in mixed flocks here.

OUT OF SEQUENCE

Central Andes

Boqueron de Palmitas

October 21, 1962

Boqueron

Nr. Medellin

6:03 a.m. 7500 ft. Edge of thicket along stream, bordering on fairly open grassland scattered with small trees. Some mixed flock including 3 or 4 green Tangaras (XIX), one Myiophobus cyanocephalus, one pair Blue and black Tanager, one slate-breasted Redstart, hummingbirds, probably others. Green Tangaras quite noisy, possibly or probably pairwise nuclear.  
1 Th. cyanocephalus → green Tangara



1 pr. Blue and Black j —————>

One of the Blue and Black's feeds close beside unknown green Tangara. No obvious reaction between the two. All the members of the flock except the slate-throated Redstart spend most of their time feeding on berries in small trees. Redstart picks and eats off leaves.

7:00 a.m. Come across another mixed flock; approximately 17700 ft., in trees and bushes in open area. Includes one Tangara no. IV; 1 Black and white Warbler; other N. American warblers (5); one Audubon Sparrow; others. The warblers and tanager feed in low trees. The sparrow hops (presumably feeds) in low scrub. The Tangara flies off in a minute or so. Not followed.

8:30 a.m. Another area. Wetter ravine, with dense vegetation 17525 ft. Come across another mixed flock including 2 BYB Tanagers (XVIII), one Yellow-faced Redstart (XX), one Black and white Warbler, one Cy, one Blue-wing or Golden-wing Warbler (whichever has facial mark), one tree wren, at least one thrush, one Blackbirdman or Magnolia Warbler (whichever has white on cheeks), miscellaneous hummingbirds, one Thraupis cyanocephala, one BCBT (different subspecies from Merida — crown not very dark or distinct, white eye patch small), one Atlapetes rufinucha (different subspecies from Quito — white patch on wings, rufous of crown particularly broad toward rear).

BYB's appear to be leaders of flock. Something in the flock sings quite frequently — and I think that it must be one



or both of the BYB's.

BCBT silent or, at least, very quiet. Up toward front of flock.

All other species silent or utter only "CN"s.

Myiolorus appears to be following tanagers. Other warblers certainly following group as a whole.

1 Cy f —————> Myiolorus.

US  
US  
Cy feeds in low shrubbery (under trees). Both on flowers and insects. All other members of flock feed both in trees and scrub (with possible exception of the A. rufinucha, which may have remained low).

When flock was first seen, it was moving uphill. Then turned and went down hill, retracing its previous course.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

October 24, 1962

Mts above Payata

Working in same area yesterday.

PR Atlapetes do occur here. Very noisy at dawn (see today's notes on gulls). Starting to move around 6:15 a.m. (approx).

Uttering lots of warbling "greeting" patterns. Definitely followed by single foliage gleaner - like Furnariid. Occasionally associated with N. American warblers. But that's all!

B. urocinclatus in area certainly do not associate with PR's. But they did once become particularly vocal when PR's were very noisy.



*Red* 7.00 a.m. See mixed flock 7000 ft 2 PR's, 2 Firebellies, 2 Ruf, probably more.

1 Firebelly f —————> !!  
1 Firebelly f —————>

But at least one Firebelly stays behind after rest of flock seems to have moved on

*Red* See same flock a few minutes later. Same ingredients. Also 1 or more furnariids, 1 N. American warbler.

There is also a group of 3 B. nigrocristatus near edge of this flock. Very noisy. But they are apparently moving in opposite direction from the rest of the birds

*Red* Puff feeding on insects in leaves and twigs. Also feeding in red deep shaped flowers. See bird to need cutting

*Red* A pair of Laps (definitely identified) flies past flock, going very close to one Ruf, without stopping 7.30 a.m.

*Red* Well! Well! The B. nigrocristatus definitely are associated with this flock

nigrocristatus f —————>

The PR's certainly seem to be passive nuclear here. Followed closely by Ruf. Other species (with possible exception of the furnariid) less closely associated

This flock quite long sustained. But Firebellies seem to have gone long ago. They are obviously too mobile to stay with any flock steadily for any great length of time.

7.45. Following trail of what may be same flock, going down hill. Near PR's. Also Firebellies. Firebellies much further down hill, possibly "leading". Then suddenly come across 3 or 4



2  
Cys. Flitting about very rapidly, with lots & lots of song. I think that this must have been a purely hostile dispute. Possibly provoked when 1 pair of Cys. tried to follow flock into territory of another pair of Cys. After a few minutes Cys. shut up, possibly leave. Then I see pair of Rufs right where Cys. used to be. Silent. Fly down hill in direction in which I think PR's and Firebellies went.

Then a few minutes later, hear PR's again, near same area. These birds moving up hill. Noisy. But apparently alone. Different birds from PR's with flock ???

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

9:15 a.m. see flock of 3 Firebellies, 2 PR's, others

1 PR f —————> Firebellies

As a result of all my observations of Coereba in different areas, it seems obvious that they must have relatively very large territories — like Cowbird spp.

This afternoon I saw a single Diglossa which was either a Hummer or a Raf in the garden of the Bolivar Museum here in town. Altitude 8625 ft.

October 25, 1962  
Agua Bonita

6:20. See pair of Atlapetes torquatus & B. nigrocristatus around. nigrocristatus f —————> torquatus. Insects uttering lots of "feet"s. Warblers sang once or twice. I don't think that the



two species stuck together long

6:50 a.m. 7700 ft. Come across huge mixed flock, including all sorts of things: e.g. at least 1 Yellow-faced Redstart, at least 2 migratorius, at least 1 BCBT (no white visible around eye in brief glimpse I had), at least two of the local Ocellularia flycatchers (possibly same as in Merida, dark rich chestnut underneath), lots of furnariids and hummingbirds. Flock scattered all levels from 40 ft above ground in trees to ground itself. Flycatchers or redstart or catbirds group, flycatching. Couldn't tell who was leading.

(After looking at skins in the University collection this afternoon, I am sure that this flock also included 2 Cnemidocoptes subcristatus. It may also have included 1 or more Hemiprocne atropileus.)

Somewhat later in the morning, at slightly higher elevations, I saw a couple of loose associations between Scrubwren and BCBT's. Probably accompanied by other species as well. 1 BCBT f —————> Scrubwren.

10:20 a.m. Another place. 7950 ft elevation. See mixed flock of 2 BCBT's, 1 Yellow-faced Redstart, 2 B. migratorius, and probably others. In moderately low shrubbery on edge of cliff. BCBT's in lead. 1 B. migratorius f —————> Redstart flycatching around BCBT's.



October 26 1962  
Agua Bonita

6:25 a.m. 8350 ft. Mixed flock passes by. Can't identify any of the components, except 1 or 2 Yellow-faced Redstarts. Flock certainly included 1 tree creeper, others. There was also a *Dulcinea* singing on the outskirts (near) of the group almost all the time.

The larger mixed flocks around here seem as well organized & "purposeful" as the higher altitude flocks in Chiriqui.

6:50 a.m. Another large mixed flock in area. Again I failed to identify most of components. But definitely included 1 or more *Hemispingus atropurpureus*, 1 or more *B. nigrocristatus*, 1 or more *Arremonops*, *Junco* spp. The *Hemispingus* seemed to be leading at least part of the time. The *B. nigrocristatus* was certainly following part of the time.

Perhaps the reason the *B. nigrocristatus* near Hono and Guana do not join mixed flocks is that there are no suitable species of *Chlorospingus*, *Hemispingus*, or *Cnemidophorus* around. Some *B. nigrocristatus* here and above Bagota may also join other flocks, not containing any "bush-tanagers", simply because they have "gotten into the habit" of joining flocks because and when bush-tanagers are (usually) present.

Working in mountains above Bagota this afternoon.

5:20 p.m. 9800 ft. Come across 1 or 2 *B. nigrocristatus* singing songs & CN's. But not associated with other species.

NOTE: All the most of the *B. nigrocristatus* observed were



The mixed flocks in the Agua Bonita region have been moderately noisy, it is possible that their songs and calls have been provoked by my presence.

Mixed flocks near Agua Bonita today were scattered in their moderately high shrubbery and low-trees. Individual birds moving up 5 to 25 ft above ground. Yellow faced Redstarts were the highest of all.

October 27, 1962  
Mt. above Bogota

Absolutely no trace of real mixed flocks here today. (See also today's notes on Diglossini) In spite of the fact that there were lots of B. nigrinotatus, Arremonops, and Diglossini around. Due to absence of Atlapetes pallidiviridis (as well as "beak-tanagers" ??? Or simply due to the fact that this area is "optimal" for the local species ??? (The Diglossini, at least, were more common here than anywhere else in the region - with the possible exception of the Tof area above Quasa).

October 28, 1962  
La Aguadita

Ca 6:30 a.m. Mixed flocks in trees along edge of road. Flocks on either side. Quite a lot of birds, including 1 Cyanocephalus, 1 Formicivora, various N. American warblers, several Tanagers (unidentified), others. Flocks as a whole quiet. Only a few "CA"s. Birds



(48)

feeding from 15 to 30 ft. above ground cyanocephala certainly not  
the leader. 6200 ft.

7:35 See both PT (!) and gyrolo in trees along stream  
5825 ft. Neither in mixed flocks. Also pair Plate-throated Redstart  
tr alone. (One of them is singing frequently.) Then see a single Plate-  
throat (possibly one of the same, feeding alone). Also Brown-capped  
Vireo alone. Feeding in same tree where Plate-throat fed earlier.

8:15. Hear a PT singing in top of eucalyptus. Also apparently  
alone.

October 30, 1962  
Boqueron de Jello  
Western Andes

7:40 Edge of wet forest. 6800 ft. See mixed flock of 2 cyano-  
cephala, 1 Yellow-headed Tanager (T. xanthocephala), 2 ♀ Goldfinches,  
possibly others. In trees about 10-20 ft above ground. Generally silent.

Ca 7:45 a.m. 6750 ft. In almost same area where mixed  
flock cited above was seen (and exactly same area where pair of Irid  
provus auales was seen earlier this morning) see a mixed flock which  
includes a pair of Tangara calcirostris and some other mixed  
colored birds. (The identification of this tanager is certainly correct).

October 31, 1962  
Boqueron de Jello

7:00 a.m. Patch of wet forest. Between 6750-6775 ft. Apparent



(21)

swallow where I saw Yellow-throats & T. labialis yesterday.  
See a small diffuse flock of "bush-tanager" type. Unfortunately without being able to identify species.

In the 3 days here, I have once seen a night Hawk and once a pair. Not associated with other species.

Mr Medellin

November 1, 1962  
Santa Elena  
Central Andes

6:00 a.m. 8000 ft. Edge of light forest. See mixed flock including T. nanus, others, feeding in trees about 20 ft. above ground. One of the others certainly BCBT. Flock breaks up fairly soon. Blue and Black's are the leaders (if any).

6:15. Slightly higher. In light-forest. See pair of BYB Compso comas and at least 1 cyanocephala feeding in top same small tree. Almost certainly others in same flock. cyanocephala flies off. BYB(s) do not follow. BYB(s) certainly not leaders of this flock.

6:40 a.m. Another area 8250 ft. Come across an enormous flock. Including, among others, at least three "BCBT"s, 1 pair BYB's, at least 1 Blue and Black, 1 adult T. heinei, 1 Cy, 1 Atlapetes refinucha, lots of N. American warblers, 1 pair furcifer.

1 BYB  $\rightarrow$  Blue and black. Otherwise flock rather diffuse and uncoordinated. The A. refinucha was in front (not necessarily in lead I suppose). Birds going in all directions. Flock as a whole not moving forward very much. Flock generally very quiet. Moderate no. of "CN"s. Occasional brief bursts of song by 1 or more of



20  
ees (unfamiliar). Very different from mixed flocks in Panama.  
Birds also always scattered over wide area.

Vegetation here is low-branch scrub with lots of small trees.  
Numbers of flocks ranging from top of small trees (no more than  
10 ft above ground) to ground itself (as only a few inches above it).

Blue & Blacks may function as leaders of flocks, but pro-  
bably only in same way as *Forficulus* elsewhere. Probably more active  
than all or most companions. Probably leave flocks quite frequently.

"BCBT"s here are presumably *Harporhynchus* or closely related.  
Cap darkest around eye & along lower border. Forehead whitish in at least  
1 individual. Tiny patch white behind eye. Eye still light!

Came across same flock only a few feet further on 7:15 a.m. Can  
see only birds in trees. BYB's, Blue and Blacks, *T. leucis*, "BCBT"s,  
warblers, all flitting about in disorganized manner. Still very quiet  
on the whole. There are at least three Blue and Blacks in group!  
Also at least one slate-throated Redstart. Many more of Blue and  
Blacks not being followed. 1 Blue and Black f ———> ("BCBT"?)

Flock still around 7:30

Moving on myself

(ADDITION: *rufrinucha* with this flock had white wing spot  
7:35 8400 ft. Similar environment. Came across what is al-  
most certainly another flock. Includes miscellaneous N. American war-  
blers; pair of slate-throats; at least 3 Blue and Blacks, including one  
juvenile; 1 Cy, at least 2 "BCBT"s; one or two pairs of thrushes (un-  
usually slaty, with reddish bill, legs, and eye ring); at least 3 *Atlapetes*  
*rufrinucha* (one pair together, one bird separate); 1 *cyanocephala*.

When first seen, one pair of thrushes was in front. There were



joined by one pair adult Blue & Black, 1 cyanocephala j —> .  
Then birds move on then N. American warblers f —> ;  
BCBT's f —> ; more Blue & Black f —> ; pair of unfr  
nucha f —> ; more Blue & Black f —> ; Cy f —>  
single rufinucha f —> ; 1 Blue and Black j —> Cy ; Cy  
f —> Blue & Black There may also have been a pair of form  
anula following along to rear. When flock moves on, a pair of stria  
ber is left behind. I don't know if there are the same birds that we  
re in front at first or not.

The various Blue & Black in flock were not grouped together  
Apparently divided into 2 family groups, seldom or never together

All birds in flock apparently usually or always feeding on insects,  
except Cy which feeds on up-shaped purple flowers. All birds in  
trees and bushes, 1 to 20 ft above ground.

When flock is first seen it is moving up hill fairly steadily looking  
quite coherent. But only a couple of minutes after it passes on it (or  
part of it — at least themselves, Blue & Black, & Cy) is back, first  
going down hill, then just milling about.

All birds very silent, except for juvenile Blue & Black which  
utters "seet"s nearly constantly. Obviously begging.

Actually, I think there are at least two juvenile Blue & Black  
around

Flock still here 8:30.

This is certainly not the same as the large flock seen earlier.  
No trace of BYB's or benes. I shall call this big flock "II", and the  
earlier one "I".

Moving on myself 8:32.



It certainly looks as if the breeding season of the tanagers is over here now, or, at least, getting on to the end.

Are the Blue and Blacks more gregarious here than they were in Venezuela?? Is this an exception to my general rule?? (I will reference a problem here.)

Blue is certainly the dominant color of flock birds here. Yellow the next most important color.

Could the blue color of Cy be significant in explaining or fail stating its association with mixed flocks???

Come back to II flock area 8:50. No final flock either gone, or, perhaps more probably, dispersed. Thrushes still around. Can also hear Blue & Black begging notes somewhere around. As I approached, I also heard Cy songs some distance away. As if Cy had begun to sing after leaving, or being left by, flock.

Then see a couple of Black-burnian warblers II area. (Blackburnian was the common warbler in mixed flocks today.) Good heavens! At least part of flock is still here. Just see the pair of rufinucha again.

Cy stopped singing long ago.

Moving on again 9:00 a.m.

As I leave see a couple of Blue & Blacks feeding in tree. Rather to one side of other birds. Not in direction in which rufinucha were moving.

Back to I area 9:04. Birds apparently gone.

9:45. New area. Far from old. 8000 ft. Patch of forest along ravine. Mixed flock including at least one Blue & Black, a pair of Yellow-faced Redstarts, 1 Cy, 2 rufinucha, thrushes, others. Micodora



W

They were at first, but probably only as reaction to me.  
Flock also includes at least one I. leucis feeding on berries  
by feeding on cup-shaped pink flowers.

Red-vented Flycatcher.

Flock also includes at least one juvenile Blue + Black, and  
several North American warblers. Also at least one flat-throat.

There must be at least six thrushes in this flock. It is the ab-  
solutely species (same as in other flocks). All together. Possibly or probably  
leaders.

Also at least one flycatcher with group  
infrimbas are more or less on outcrops, in uncovered scrub  
area.

Mr. Cole

November 2, 1952  
Mares  
Western Andes

6:30-7:15 a.m. 6200-6300 ft. Patch of wet forest.  
Lots and lots of birds here. So thick that it is difficult to discern  
single flocks from general background.

Have seen 2 flocks including Tangara xanthocephala and I  
no. XXVI. 1 XXVII  $\rightarrow$  xanthocephala

BYB's have not been in these Tangara flocks. SEE TODAY'S  
NOTES ON COMPSOCOMA

There is at least 1 pair of flat throats around. Not associated with  
other species.



November 3, 1967  
Munchique  
Western Andes

6:00 a.m. 8400 ft. Arrive here in pouring rain storm. Almost impossible to walk. But see a pair of Blue & Blacks in small tree & tangle of vines on edge of wet montane forest.

Finally give up waiting, and start to go uphill. Long trip. Rain continues - heavy. Do not get all the way up, but reach region where forest starts to give way to lower but very dense scrub (not real Paramo). Probably at least 9200 ft. Possibly more. Then down again. Returning to car at 7:00 a.m. During this whole trip, observational conditions were abominable; but I did notice the following groups, near the upper edge of the real forest:

I. A group composed of at least one tanager which appeared to be a subspecies of Drepanis superciliosa (orange spot on crown, grayish black above - presumably blue affected by rain, and extensively rufous below); two Yellow-faced Redstarts; one Yellow-belly; several furnariids; possibly others. Furnariids f —→ "superciliosa". This flock was quite noisy. Several bursts of Atlapetes-like warbling phrases.

II. A group of two or three Atlapetes-like birds. Possibly PL's. Quiet. Nothing more than CN's. In bushes & small trees.

III. A group of at least one cyanocephala, at least one Yell. sw-belly; one or two BYB's; flycatchers; possibly others. The BYB(s) may have left the flock without being followed by the



(93)

others. BYB(s) moving (see today's notes on Campocoma), probably after leaving the flock. Others quiet. All in trees 10-30 ft above ground, along edge of road.

IV 1 Atlapetes infimula (white spot in wing), and 1 Thraupis atripennis, were seen, a few feet apart, in moderately low scrub, for a few seconds. Probably silent or quiet.

Groups II, III, & IV were seen in nearby areas, within a few feet of one another. They may, conceivably, have been parts of one larger group. If so, II was probably following III.

During the same walk uphill and downhill, I saw a group of 2 or 3 Cnemidophorus ruber, ca. 8000 ft, in low trees by the side of the road. They may have been alone.

Also saw two groups of 2 or 3 Blue and Blacks, at fairly low elevations, in trees by the side of the road. They may also have been alone.

Also saw one pair of Yellow-bellies. In similar environment. Possibly also alone.

Also two groups of Butoripus montana (see today's notes on genus). They were both definitely alone!

Butoripus montana seems to be the only local blue and yellow tanager which keeps quite apart from associations with other species. Possibly it is so large that it frightens other species? And/or feeds on different foods ???

10:45 a.m. 8000 ft Rain still continues. See large mixed flock along edge, and slightly within, heavily vegetated forest. Includes at least two adult and one juvenile Blue and Black Tanagers, at least two Yellow-faced Redstarts (probably



more); one Cy; one Atlapetes rufinucha; several Rusty Thrushes (usual species); lots of hummingbirds; flycatchers; Junco idei. Definitely no BYB's, cyanocephala, Yellow-bellies; or S. heinei. The flock in general was quiet; and did not make much progress while we watched it (approx. 15 minutes).

The "center" of the flock was usually composed of Blue & Blacks (with or without some or any of the others). But 1 or 2 Blue & Blacks sometimes flew away from the group without being followed. When the Blue and Black's were at the center, they were usually surrounded by flycatching Redstarts. The Cy and the rufinucha were frequently on the outskirts of the group. Most of the members of the flock stayed 10-40 ft up in trees. The Cy and the rufinucha sometimes went low (only a few feet above ground) in scrub at edge.

The Yellow-faced Redstarts do appear to be regular members of mixed flocks. But I have not been able to determine if they play exactly the same role as Collared Redstarts in Chiriqui (I wonder if Collared and White-faced Redstarts are particularly closely related ???)

11:05 a.m. Another area, same altitude. Open second growth with trees. See a single Cy follow a pair of cyanocephala. I am somewhat surprised to find BYB's, Cys, and Yellow-bellies in mixed flocks here.

Must check to see the position of this area within total ranges of the Yellow-belly and BYB.

Cy is the most remarkable. At first I thought it might be particularly gregarious in the Central Andes near Medellin and



(u) the Western Andes here because the area is generally unfavorable for Diglossini (wide ranges of carolinensis and lutescens, possibly the rarity of albilateralis, apparent absence concoloratus, etc.) It could be a general rule that species show inter-specific gregariousness wherever conditions are not very favorable, i.e. in regions where they themselves are rare. But the P.B.T.'s in Chiriqui would seem to contradict this (as a general rule). Possibly species tend to develop inter-specific gregariousness wherever they do not have many close competitors ??? (Probably there are more hummingbirds near Quito than anywhere else I have watched Diglossini.) It is also possible that the whole situation is due to the fact that Cys have a special inter-specific preference for Blue and Blacks.

November 11, 1962  
Munichique

5:35 a.m. 8300 ft Weather clear today.

Pair of Blue and Blacks feeding in tree along road. About 20 ft above ground. Pair of Thrushes in same tree. Difficult to tell if they are associated or not.

Blue and Blacks utter single "Trit"s, and short series of such notes, in addition to "see-see"s and "see-see-see"s.

Thrushes move in different direction from Blue & Blacks.

6:05 Now see 3 Yellow-faced Redstarts in tree next to Blue & Blacks, about 20 ft away. Then Blue & Black j —> Yellow faces. Then Blue & Blacks move on without being followed.

This pair of Blue & Blacks is not very nuclear!



6.20 a.m. 8525 ft. Saw only 3 Blue & Blacks feeding in trees along side of road. Second growth. Open fields all under. Not associated with any other species.

6.30 a.m. Considerably further on. See another pair of Blue & Blacks feeding in small tree. Joined by pair of "Yellow-bellies". Then Blue & Blacks move on. "Yellow-bellies" do not follow.

Then birds were far away, but "Yellow-bellies" appeared to be larger, bluish on back & wings! ?!

Then see another pair Blue & Blacks alone!

8650 ft. Still another pair of Blue & Blacks feeding alone in small tree in scrub.

Blue & Blacks are certainly enormously abundant up here.

7.00 a.m. 8750 ft. Hear presumed by singing in distance. Then see single slate throat, approx 40 yds away. Then see pair cyanocephala further on. Then more birds near latter. Including at least one Yellow face, and a pair of Blue & Blacks cyanocephala for  $\rightarrow$  Both species tanagers feed on fruits same small tree, but not simultaneously. Similarly both Redstarts fly about from same tree, but again not simultaneously. There is a patch of wet forest. Both old & young give. Rather open.

Blue & Blacks are not usually conspicuous at the center of this flock.

A few feet further on we what may be same pair of Blue & Blacks. Yes! Still followed by cyanocephala. Then Blue & Blacks fly off. Not followed by cyanocephala. Land in another tree. Here they are supported & chased (possibly actually attacked) by "Yellow-bellies". Blue & Blacks then fly off in one direction, "Yellow-bellies" in another.



This "Yellow-belly" obviously same species as seen earlier this morning. This time, get slightly better look at it. Wings & head apparently blackish. Dorsal back & rump bluish. Yellow patches on side of head apparently larger than in Venezuelan form.

9:40 7000 ft. Patiti wet forest. Group of Blue & Blacks, 1 "Yellow-belly", 1 Agelaius sp. "Yellow-belly" ♀ → Blue & Black.

Get another fairly good brief glimpse of the "Yellow-belly". Just like Venezuelan form, but yellow patch side of head possibly slightly different shape and there does seem to be a blue wash on the primaries.

This is probably the same Yellow-belly seen with flock yesterday. All flocks seen today have been quite quiet.

CORRECTION. Highest point reached yesterday 8750 ft.

Then — 8:30 a.m. 9300 ft (confirmed). In edge wet forest along road. (Forest moderately high, for such an elevation, and somewhat broken up by the effects of road-building and landslides.) See enormous mixed flock. Probably the largest I have ever seen. Including large numbers and many species of furnariids (s.c.) and flycatchers. Also a variety of hummingbirds. Also the following 9-pinnated songbirds (quite possibly others as well):

At least 3 PL Atlapetes. Definitely identified. Sometimes (probably not always) the leaders of the whole group. Usually quiet. Occasionally uttering bursts of "greeting" notes. Forest in low scrub or tangles. At other times high in trees, at least 20 ft. above ground.

At least one pair of Yellow-faced Redstarts. Definitely full



3  
owers, at least most of the time - but often (or usually?) quite near the front. Also frequently making sallies to side. Quiet. Both high in trees and low in scrub.

*Sitta*  
Also one pair of Sittas. Definitely followers. Toward middle or rear. Quiet. Both high in trees and low in scrub.

*WCC*  
One ♀ White-capped Cuckoo ("WCC"). Probably also one ♂ (at least I caught one brief glimpse of what appeared to be a small blackish diglossine). Like Sittas. Toward middle or rear of flock. Quiet. Both high in trees and low in scrub.

*Sitta WCC*  
The Sittas appeared to follow the ♀ WCC particularly closely for some seconds or minutes.

*WCC*  
(This is an unusually high altitude for WCC's. But the identification of the ♀ was clear. Perhaps the WCC(s) followed the flock up from lower altitudes ???).

One pair of Yellow-bellies. Definitely followers. Toward rear and (sometimes) outskirts. Quiet. In trees.

One or two Chlorornis!! Definitely followers. Toward middle or rear. Quiet. Both high in trees and low in scrub.

At least one Cremoceryx nebulosus. Quiet. Both high in trees and low in scrub. Near front. Possibly leader(s) ???

Also one or more "warblers" which looked like Bamblitz eris luteoviridis but with stripe above eye white. Usually low in scrub. Quiet. Probably a follower ???

As far as I could tell, all the 7-primaryed songbirds inter alia were feeding on and/or cooling for insects.

The flock as a whole was rather noisy. Mostly "CN"s, but



(3)

an awful lot of them !!!

Two tree-suckers (same species) became involved in a fight. This was the only overt hostility observed within the flock.

When first seen, the flock was moving rapidly down hill. They turned around and moved rapidly uphill. Moving much more rapidly and coherently than any other flocks I have observed in the Andes (with the possible exception of the brilliant flock near the Parí de Quasa - when it was at its best.)

Two or three Butorampus montana were also associated with this flock throughout the whole period the flock was watched (approximately 1/2 hour). But their association appeared to be "coincidental". The Butorampus flew by, occasionally, back and forth, without paying any overt attention to the flock and they remained behind when the flock left!! The Butorampus uttered quite a lot of "seee seee seee ..." notes in flight, both when the flock was near and after the flock had left. Usually or always in tree-tops. Certainly never functioned as leaders.

NOTE: I am beginning to think that my identification of the "BYB" yesterday was mistaken. I may have seen a Epil subbelly instead.

November 14, 1962  
Marcel

Arrive 5:35 a.m. Clear. Not much early morning song. No DC. Birds obviously past peak breeding season.  
6.00 a.m. See a group of 4 BYB's flitting thru tree-tops. Apper



cutly not associated with individuals other species.

The presumably migrant *Catharus* around here is dull above, with a wash of buffy on throat, and, apparently, a buffy eye ring.

6:10. See group of 3 or 4 BYB's (presumably same as before) in the tops. Again alone.

6:50. Have seen same group BYB's several times more. There are probably at least 5 birds in group as a whole. Always alone!

7:05. Mixed flock. See mixed flock in trees. Includes several *Tangara arthus*, at least one (♂) *Cypselus niger*, several others (either *Ammodramus rubrostris* and/or some gray-headed, possibly striped headed, yellow-bellied *Basileuterus*). *arthus* may have been leader. This flock was in exactly same area where BYB's had been earlier, but the BYB's were neither visible nor audible at the same time.

The *T. arthus* uttered lots of single "see" Notes. Occasional "see-see"s. With very little or no trace of the hoarse quality of the notes of silver-throats. Also rather loud, hard, single "Tuck" Notes.

There are several large trees around here, covered with tubular pink flowers. But they have not been visited by any diglossines (and probably not by any humming birds). I think diglossines may be absent here.

The mixed flock described above moved on quite rapidly. I followed in same direction. Catch up with the *arthus*. Apparently alone, except for a single *Catharus* about 20 ft away. There is a juvenile bird with the group. All the *arthus* are feeding on the same small round "berries" as the BYB's earlier.

7:30 a.m. See mixed flock in mixed growth along edge of road.



Includes at least one I. labradoules, migrant warblers, others  
fairly low, about 5-10 ft above ground. Then a little further on we  
see Arctus, one (another?) labradoules, one furnished, in trees  
about 20 feet above ground. Obviously part of same flock. No trace  
of BYB's.

BYB's are definitely keeping away from mixed flocks here.  
There were no obvious leaders to this Arctus - labradoules  
flock. Flock seems very incoherent, as if all the associations were more  
or less casual.

7:50. For what may be a single local BYB in small tree  
in scrub along road. Silent. Possibly part of Arctus - labradoules  
flock (Crown grayish, little or no white behind eye).

Fog coming in now. Difficult to see birds. 8:00 a.m.  
Arctus - labradoules flock still around. Doesn't seem to be  
progressing in any particular direction. Birds flying back and forth  
trees both sides road. Includes at least 4 or 5 Arctus. Single (?)  
labradoules still with flock. Also furnished. Also at least one I.  
xanthocephala. One Flute-throat nearby.

1 labradoules } —————> Arctus

One fight between 2 Arctus

8:10. Flock apparently getting larger. Now includes lots  
more warblers (including one Black and White, one Pitangus or  
Parula). Also one Yellow-throated Tanager! One pair of another  
Tanager species. (XVIII).

Flock still in area where BYB's were. BYB's still absent.  
Arctus certainly nuclear in sense that they are most common  
on road conspicuous. But they don't seem to provide much leadership.



No other species seems to be reacting to them particularly strongly.

Others may be uttering Trills (W-hills?) or R's quite frequently. At least something is.

There are at least 2 xanthocephala with flock. One is juv. 1 xanthocephala ♂ → XXVIII.

The labradoules definitely tends to stay moderately low in shrubbery. Other Tangaras usually or always higher. xanthoceph also usually approx 15-20 ft above ground. XXVIII is higher tree tops, 25-30 ft above ground.

The "BCBT" here is probably different species (XXIX).

XXVIII's do have black in wings. Not bars.

There are probably 2 XXIX's with this group. One apparently chases the other, uttering long R in flight. XXIX (s) usually fairly low in shrubbery, like labradoules. But seldom or never close to the latter.

Still no trace BYB's around

Flock seems to have moved on a little (downhill) 8:30 am

Starting to come back 8:50

But I have to leave myself

April 1, 1963  
In Jaruma, Peru

Worked above Jaruma this morning, below Jaruma this afternoon covering range approximately 10,700 - 9000 ft. No trace of mixed flocks or any special inter-specific reactions involving species of my group(s). Species present include CC's, Bonins, Thraupis bonariensis (common) and



Like "Amazon-type" Finch listed as XXX in Cat.

April 2, 1963  
Near Tarma

Have been working in same areas today and yesterday, plus a little higher area and several lower areas (11,150 ft to 8540 ft). Still no signs of mixed flocks. In addition to the species noted yesterday I have seen several Gray & Yellow Finches (XXXI) and one species of Spizella (XXXII), between Tarma and Pales. Also heard at least one bird singing songs like Catantop "homochronum" near Quito, above Tarma. There are also lots of Andean Sparrows and Black-headed Goldfinches everywhere. Also some Phryz plus unicolor above Tarma. No associations of any sort between any of these species.

April 4, 1963  
Near Tarma

Today I worked in a humid area, ranging from 8125 ft to 9000+ ft. Some parts of area thick scrub. Other parts open scattered scrub. Still other parts grassland. Occasional trees. Came across 2 Foxgloves, and one pair of PL Atlapetes, in addition to species previously seen.

But still no trace of any friendly association of any kind!

NO TRACES OF ANY MIXED FLOCKS DURING  
LATER WORK IN TARMA AREA



April 3, 1963  
New York

66  
66  
I haven't seen any trace of mixed flocks around here either during the last four days. Species present include Pinnies, A's, G's, Thraupis, per broussonetii, "PL" type Actinopetes, (probably) the Gray and Yellow in fruits, the Black-headed Goldfinch, Arremonops, and Catantops ma males.

CORRECTION: What I have been calling D'Orbigny's may really be no. XXVII.

Addition - This evening I saw large groups of Phryganea and Catantops - like flocks moving in groups - possibly to roost. Must check next time, to see if there are really organized flocks.



(1)  
April 30, 1965  
Murchique

7:00 a.m. Small narrow near Juncos. Approximately same altitude as Juncos (17800 ft - 21000 mt). See single Atlapetes rufinucha (white spot on wing). Hearing three low, bare trees, in open marshy area. Still no "scat" notes. Apparently alone.

Move on a little further, and see that this is really a family group of Atlapetes rufinucha. 2 adults and at least 1 juvenile. Juvs. sounds as if it were begging. But group still apparently alone.

Arrive adjacent patch of what looks like second growth forest.  
7:15. Apparently nothing around. Not even Dryocopus - altho there are some pink Perisoreas around.

7:25. I can hear a few birds moving about, without seeing them. Then see single Blue & Black (Tangara xanoria) Alone. In tree tops 20 ft above ground. 17900 ft.

The underbrush in this patch of forest is not very dense. Either by itself? But this may help to explain why Albis seems to be absent.

God! It is humid here. It has stopped raining, but everything is just dripping.

Leave coming out 7:50. Go up to 8075 ft, without seeing anything more except hummingbirds. There are a lot of the latter in the forest here. See a single Sooty Humbird alone.

Going up a little further, get to region where undergrowth in forest is quite thick. This sort of vegetation would be full of birds on the Pico de Espiga in the Sierra de Nevada. Including Albis. But it apparently isn't here. Why???



1 2 4 20  
Wet! Wet! 8:23 a.m. 8200 ft. 2550 m. See mixed flock  
going rapidly down hill. thru strip of wood. The individuals I saw entered  
led from the edge of the wood into the center, at least 30 ft inside. Flock quite  
large. Probably included at least 20 birds. But I only identified  
four of them. 1 Red Woodpecker, 1 Thraupis cyanocephala, 1 Carpodacus  
flaviventer (BYB), 2 White-throats (looked like pyrrhuloxia from a  
distance - but I didn't get an awfully good view of them - certainly  
not Slate-throats) Probably also some Myiospiza - Chondestes  
types which I didn't see well enough to identify. All individuals seen  
ranged in trees 15-40 ft above ground. All quiet, except White-throats  
which gave a few rather soft-like song. Red Woodpecker follows  
→ group BYB → White-throats. White-throats were  
flocking about very actively. Usually at or near front group. But at  
least once White-throats → group

Rain 8:40 a.m.

There may have been one thrush at the end of this flock. Apparent-  
ly sooty. It suddenly appeared, after the rest of the flock had disappear-  
ed. Moving in the same direction that flock had gone.

Rain changes into fog. Then fog lifts, more or less, 9:05 a.m.

9:10. 8350 ft. See single Sooty Thrush alone

9:20 8450 ft. See single Sooty Thrush. Possibly same individ-  
ual as above. Hear a single thrush-like bird which may be an Agelaius.  
Also several small unidentifiable warbler types. The thrush and the Agre-  
ornis type fly off in different directions. Apparently the warbler types do  
not follow.

9:28. Hear a Dulonia in the neighborhood.

9:32. Come across single Agelaius type. Definitely same indivi-



3  
dual as before. And definitely alone now.

Stay back in again. Starting down hill 7:43 a.m.

There are quite a lot of red tubular flowers here, around 8300 - 8450 ft. But apparently only 1 species. And I have yet to see anything foraging on them. Too high to see if they have holes or not.

Everything seems to be keeping under cover now that the fog is thick 9:51.

See a pair of Sooty Thrushes alone.

Keep on going down hill, until 10:30 a.m. Come to a rather isolated patch of forest. Approximately level with the Tencia. It is now raining hard. And going across the most surprising mixed flock. Includes at least 4 (possibly 6) Slate-throated Whitestarts (1), 2 Sooty Thrushes (1), 1 BYB, and 1 Blue Dufouria.

The Blue Dufouria is puzzling. Dark but dull. Certainly not adult Cy. Looks even too dull for juv Cy. Too dark for a Coey, I think. (Even a Coey in the rain). Certainly not adult indigotica. Could this be a glauca? (If so, I will call it "glauca".)

The Slate-throats were certainly nuclear! And apparently passive nuclear! Flitting about very actively and conspicuously. Probably disputing. Very noisy. Lots of sharp "Tut" or "Tut" like notes. Presumably SHN's. Also lots of Rattles. Apparently accelerated noise SHN's.

Sooty Thrushes j —————> Slate-throats at least twice. Perched glauc j —————> group at least once.

BYB's behavior possibly more complicated. When I first saw the bird, it was about 40 ft from the Slate-throats. The Slate-throats were moving fairly steadily in one direction. Thus, it



is possible to say that the BYB was in front of the Slate-throats. But, I think, that the BYB had just "come in", i.e. just flown to this position from some distance further away. Thus, it may have joined the Slate-throats. In any case, it just sat where it was until the Slate-throats caught up with it. Then it flew away with the Slate-throats. I couldn't determine who was following whom.

The sooty Thrushes seen today must all have been fuscatus, I think. Definitely brownish-sooty, not black. My best view was of the birds with the last mixed flock. Definitely with orange coral bill and legs. One individual seemed to have a dark eye-ring, the other seemed to have a yellow-orange eye-ring. Chin dark, light the body. Definitely not at all light. Abdomen and vent region also apparently dark.

If it is really characteristic of this region that Turdus fuscatus and Myioborus miniatus are regular members of mixed flocks, then it probably would be correct to say that mixed flocks reach their "highest development" in this region.

If so, it rather confirms my current general hypothesis. I.E. the development of mixed flocks in any given region is positively correlated with the frequency with which the region is (or has been) invaded from other regions.

ADDITION: The Slate-throats in the Slate-throat-BYB - "glanc" - sooty Thrush flock were seen to range from 10 to 30 ft above ground. The "glanc" was seen to range from approximately 10 - 20 ft above ground. The sooty Thrushes appeared to have much the same range as the Slate-throats. The BYB was



seen to range 20-30 ft above ground.

(Incidentally, the identifications of BYB's in flocks this morning were quite definite. No possible chance of a mistake. So my supposed observations of this species here in 1962 may have been quite correct.)

Rain pretty much stopped later in afternoon. Going uphill

3:15 pm. Area where Kate-throat mixed flock seen this morning. See single Sooty Thrush (bugle eye ring) alone. Hopping on ground edge of scrub. Silent.

(Incidentally, again, the Sooty Thrushes here sound like the few I know in other regions.)

See pair Kate-throats in tree-top. Sooty Thrush flies into same tree, much lower down; they fly off. Kate-throats remain behind. Also hear what sound like Alb. R's same area, but don't see bird before it flies off. Something also giving "Secret" Notes (Alapitta?) not far off.

Going on 3:28 pm

3:35. Another area. Approximately same altitude. Another (Cory) pitfalls forgot. See mixed flocks. More or less in tree tops. Includes Sooty Thrush, 2 BYB's, 3 Parus xanthocephala, 1 other bird which may be the real T. labradoroides, probably others. All observed individuals more or less in tree tops. BYB's fly off in one direction. Nothing follows. Then the xanthocephala fly off in opposite direction. Nothing follows immediately. But then I see some other (unidentified) bird fly in that direction later. Catch glimpse what is probably same flock a little further on. Now includes at least one Blue & Black Tanager, and 1 Yellow-faced Whitestart. Yellow-faced Whitestart j—  
→ Blue & Black.



3:55 pm. Come across what is undoubtedly largely same mixed flock seen earlier. Now includes at least the xanthocephalus, 1 Blue = Black, 2 BYB's (i.e. the BYB's must have rejoined the group after leaving it once), 1 White-bearded Flycatcher, and 1 WCC. Probably others. Group has now left forest, and is flying from isolated tree to isolated tree in pasture. 20-30 ft above ground. All quiet. The 2 Tangara species seem to be in the lead. Once, the BYB's definitely follow the whole group. They seem to be bringing up the rear.

BYB's seem to be active nuclear here.  
Flock moves on and I lose sight of it.  
See Atom-Woodpecker-like Woodpecker alone.  
See single Sooty Thrush alone.

4:20 pm. Another patch forest. 8175 ft. Looks like patch original forest. Including 10 or 12 small warbler-like birds. Usually quite high up, 25-40 ft above ground. Occasionally coming down as low as 15 ft.  
This part of the group includes at least 1 Chlorospingus canigularis, 1 bright blue bird (2 WCC?), 1 unidentifiable migrant Dendroica.  
No Tangaras. When the group was first seen, there also was 1 Sooty Thrush in tree tops, right in the middle of the other birds. But the thrush apparently did not follow the others when they moved on. Also closely associated with group was 1 Yellow-faced Warbler (see description LXXXIV). This bird spent most of its time flitting around scrub edge forest, 1-20 ft above ground.

Group as a whole fairly quiet, but there were some "CN" and "alCN" and some more complicated vocalizations from time to time.  
Shortly after I became aware of the group, a flock of "Atom" Woodpeckers flew into trees about 5-20 ft away from the warbler-



types. At least 6 woodpeckers in the group. Silent. Ranged up and down tree trunks, 5-35 ft above ground. But they all eventually move off in the opposite direction from the warbler-type group.

Fog coming in 4:44 p.m.

The warbler-type flock moves on down hill. Only 5 minutes later a flock appears in the same trees. But this suggests to be a different flock. Moving up hill. Includes at least 1 pair of 2 different species small woodpeckers, 1 pair of 2 different species flycatchers, 2 adult and 1 juv. xanthocephala, 2 BYB's, some Whitethroats (unidentified), 10 and 12 WCC. Also others (migrant warblers).

All in tree-tops 15-40 ft above ground. Group as a whole quite noisy. Lots of "CN"s. Also R's.

BYB's follow and join group repeatedly. xanthocephalas follow ———→ group twice (at least). No sign of any particularly close association between the 2 species tanagers. Difficult to say who is leading group. At first, some of the woodpeckers seemed to be in front. Then the WCC's seemed to be in front for a while. Woodpeckers of ———→ WCC's.

Incidentally, the ♂ WCC here has a light blue cap. I think that the supposed "Glauc" I saw this morning may actually have been a ♂ WCC (The identification this afternoon is definite. I saw the Cornucopia bull.)

If there really were 2 flocks here this afternoon, this may be the first time I have ever seen "ranges" two mixed flocks overlapping.

This last flock starts to move on. So I go inside the patch of forest. To the area where I think the tail end of the flock still is. At this point, the fog turns into heavy rain. So I can no longer see



any birds above me. But I do see a family group of 3 Atlapetes  
brunnei-nucha (looking just like the Chiriqui birds). 2 adults and  
1 young. In very low scrub, 6" to 2'± ft above ground. Scrub very  
thick, well covered by trees. Just like some of the scrub labeled by  
same species in Panamá. One or more of the birds (s) utter (s) some  
notes (probably "beet" type notes - as far as I can tell above the  
rain). It is quite possible that these birds were connected with (at-  
tracted to) the flock in the trees!

COMMENT: Certainly, mixed flocks are not rare here  
now!!! And there is no evidence that they are depressed, or suppress-  
ed, by bad weather here. The whole picture seems rather different  
from the Sierra de Merida (or the Eastern Cordillera of Colombia)

May 1, 1965  
Munchique

Arrive very top of Munchique, just by the TV tower, just con-  
sider 3000 m, 6:50 a.m. Cold and windy. Fog just starting to come  
in. Vegetation here is dense "alpine scrub." Looks ideal for Cassidix  
eximius and associated form. But everything quite quiet now. (See  
comments below.)

Quite a lot of red tubular flowers near here.

See and hear some little birds flitting about. But all low in  
scrub. Some of them certainly are hummingbirds.

Go down the road a little bit. To where there are some la-  
rger trees. See a couple of single thrushes alone. Presumably, footies.  
Vegetation here much lushier, "lower altitude looking", altho there



area can't be more than 100 ft below peak

7:30 a.m. 7250 ft. Hear, and catch brief glimpses of a pair of *Raoulstonia* or *Hemiprocne* types. No low scrub, also in trees 20 ft above ground. Uttering "CN"s. Apparently alone.

Windy and cold as hell now. But fog has lifted. See single through alone. Apparently sooty. But juv. Dark eye ring. Bill half dark.

Looking at some red tubular flowers 7:45. No *Duglossa* holes. 7:49. Hear what sounds like bear in distance.

Going up hill again 7300 ft. 7:55. See definite mixed flock.

Includes at least: 1 pair *Agornis* types (species seen yesterday - LXXXVI)

1 Blue-Orange, 1 PL *Atlapetes*, 1 *Cyanocapla*, some hummingbirds. *Agornis*-types definitely in lead (fly catching all around). 82 f → group. *Cyanocapla* f → group. Blue-Orange f → group. All birds high in rather scattered trees. 30-40 ft above ground.

Then PL flies across road into low scrub. Nobody follows.

It may be significant that the wind abated, temporarily, just about the time I saw this group.

8:05. A few feet further on, catch up with group again. Still in trees. Now includes 1 Yellow-belly, 1 GT. GT f → group.

All birds quiet. Then hear our burnt twitter. Quiet again.

Group now, 8:10, seems to have disappeared down hill.

A little further along road, see pair Sooty Monarchs alone. One has orange bill, legs, dark eye ring. The other has dark bill and legs as well as eye ring. The latter seems to be Begging from the former. Presumably juv. and adult ♀. Both birds first in low scrub and then in trees.

Wind still abated now 8:17. And it actually looks as if the



sun might come out

Up by TV station again 8:30. Sun shining. Wind not too bad. This area looks ideal for Rufous. But I certainly haven't seen any yet. See another single Sooty Thrush alone.

Nothing 7:00 a.m.

There seems to be quite a lot of little birds in the scrub here, but they are impossible to see and identify.

9:35. Going down hill. See pair Sooty Thrushes apparently alone.

9:45. Near where mixed flock seen earlier. See single Yellow-belly. Apparently alone. Correction. There are at least 2 birds here. Probably pair Yellow-bellies. Feeding in trees 6-20 ft above ground. Uttering "CN"s.

Some distance further on, see single Ocellular alone.

10:00. Flush a single Sooty Thrush from scrub in which I hear another species vocalizing. But latter unfortunately invisible.

10:05. A single Agnornis type flies around, flycatching. Then flies straight away, like an arrow. Immediately, a single Yellow-belly launches itself from scrub and flies after Agnornis-type. Apparently not hostile. Presumably the Yellow-belly just couldn't "resist" the sight of another bird flying away.

See another single Sooty Thrush alone.

10:25 a.m. A small blackish or dark blue bird flies by alone.

Beautifully warm and still now!

10:35. Going up hill again. Hear some twitters which might conceivably be other song phrases. Only 2 or 3.

Will! Will! 10:37. 9250 ft. Region of low, dense, scrub, tangles, under dead trees. Surprise a ♀ Albi. Very upset by my presence. Lots of extreme TF's, with less extreme WF's. Lots of sharp, high, "Trit".



Flocks. Also lots of R's, of extremely varied lengths, apparently accelerated & series "Tut" notes. Altho this bird is quite conspicuous, it does not seem to attract anything else.

This is area where mixed flock with VCC and flocks seen in 17 or 22. So specific range of Albe here overlaps WCC, flocks, and Ap (which occur further down the mountain — see comment below).

A little bit further on, we saw a single GT. In trees. Apparently alone. But it had just flown down hill. And when I looked up hill, to area, where it seemed to come from, I see pair of Butorangs. Feeding on fruit in trees and scrub. Same species seen before, i.e. cucullata. Now apparently alone.

When I look back to GT's, I see they are a pair of them. GT's are followed (after a minute or so) by pair of Yellow-bellies. Yellow-bellies also coming from area where the Butorangs used to be! GT's then fly off. The Yellow-bellies do not follow, at least immediately. Then Yellow-bellies fly off in different directions.

Leaving 11:20 a.m.

On way down, we at least two more mixed flocks. The first only a few feet below where I had been working. But I had no time to stop and look at them.

#### COMMENTS:

On the way up (by horse!) at dawn, we heard a great deal of bird sound near the base of the mountain (probably ca. 8000-8500 ft.). Possibly the birds of this altitude are breeding now. But the sounds decreased, very markedly, as we neared the top of the mountain. Certainly, most of the birds around 9000 ft. are not breeding (viz. also the later observations this morning).



II It is possible that mixed flocks near 9000 ft, now, are smaller and less specialized than the flocks at slightly lower elevations near (see, especially, this morning's observations of Sooty Terns). But the 9000 ft birds certainly do (still) form flocks with appreciable frequency. It is too early for me to tell if these flocks are "dispersed", or "reduced", or otherwise altered, by bad weather.

III It has just occurred to me that two of the thrashers which occur in mixed flocks here most frequently, i.e. the Blue & Orange and the GT, have rufous or chestnut vent regions. Is this an adaptation to induce following responses (as it seems to be in some related species) ???

IV Most of the species observed today played the usual roles that I expected. But I was surprised that PL's were not more conspicuous in flocks. And even more surprised to find Agreornis-types as leaders. (This may be another area — like the Eastern Cordillera of Colombia — where there are more natural followers than natural leaders.)

V GENERAL. I must try to get my ideas in order.

Let us assume that mixed flocks are absent from the central Andean area, but present along both the northern and southern frontiers. And highly developed, also, in the Western and Central Cordilleras of Colombia.

I think we may also assume that the formation of mixed flocks is a "frontier effect". Advantageous to individuals living on or near a frontier (probably because frontiers tend to move back and forth, and gregariousness is advantageous to birds



occupying new areas.

But it probably is strongly disadvantageous, in many cases, for birds not occupying new areas. Thus, there will be strong selection against it everywhere except on frontiers.

Whether or not gregariousness develops in any particular population of a suitable species must depend upon the balance of selection pressures for and against it. Populations with frontiers on three sides tend to develop gregariousness. Populations with frontiers on only one side usually do not.

The extreme development of gregariousness in the Western Cordillera of Colombia can be explained on the frontier hypothesis. The temperate and sub-tropical areas of this cordillera are essentially a series of small islands. Any population in any one of these islands will include a relatively large number of individuals on the borders and a relatively small number of individuals "inside", away from the borders.

The crucial area will be the Central Cordillera of Colombia.

If the mixed flocks of the Central Cordillera are less highly developed than those of the Western Cordillera, then it seems quite likely that the "frontier effect" may explain almost the whole in the variations in gregariousness throughout the Andes.

If the mixed flocks of the Central Cordillera are as highly developed as those of the Western (or, better yet, more highly developed), then it may be necessary to involve another (additional) phenomenon or process. Possibly the frequency of mixed flocks in any given area depends upon the frequency with which that area has been invaded by other species — invaded by species which have had to cross over



gaps in order to get there. The Central Cordillera, being surrounded by similar montane areas on almost all sides, might be expected to be invaded (over gaps) more frequently than any other part of the Andes.

Comparisons between the Eastern Cordillera of Colombia and the Sierra de Mérida on the one hand, and between the Eastern and Central Cordilleras on the other hand, should confirm the conclusions suggested by the comparison between the Central and Western Cordilleras.

This afternoon working near the Finca. Above patch of forest where slate-throat flock seen yesterday 3:30 p.m. It is still nice weather (altho there are rain clouds and thunder in distance, and patches of fog are not far away). Not a trace of a bird here now!!! No sight or sound. Does good weather discourage the formation of mixed flocks among the birds at this altitude ???

Fog comes in 3:40 p.m. Only a couple of minutes later, I hear my first CN-like Notes!

A few minutes later, hear first thrush sounds. Also something which may be a Dubuna in distance!

Then see group of 4 thrushes together. In trees. Apparently alone. Uttering lots of their high "seeeee" Notes. One supplants another in an apparently hostile manner. With "squawk". Then all fly off.

A little further on, see single thrush alone.

Fog now getting thicker 4:05 p.m. Then lifts temporarily 4:15. Still no real activity in this patch of forest.

4:32 p.m. Again see pair thrushes apparently alone.

4:35. Hear something that sounds like Albi R.



Then Bear leaf insect Plate-throat R. Same place as yesterday  
Then a lot more Plate-throat R's 4:50 p.m. Two birds (at least)  
in tree-tops. Apparently alone.

See single Bear feeding on flowers alone

(Incidentally, I don't ever recall seeing Bears in mixed flocks  
anywhere. They seem to dislike such flocks. And their respect in which  
they are diglossini-like.)

Fog lifts completely 5:00 p.m. But Plate-throats continue R's  
Certainly the Plate-throats and Sooty Thrushes are not always  
in flocks!

Plate-throats silent now 5:02.

See single Thrush alone

Leaving 5:12 p.m.

May 2, 1965  
Munchique

Arrive top Munchique 6:22 a.m. Clear. Warm. Moderate wind.  
On way up, at relatively low elevations, I heard Tof-like songs  
ca 5:45 - 6:00 a.m. The area looked most unsuitable for lapunayae sep.

Presumably, Whitestarts.

There is very little singing, nothing singing, at this level 6:30 a.m.

6:37 Pair Yellow-bellies moves thru tree-tops. Low trees, only  
13-20 ft above ground. But the highest available here. Birds definitely alone  
c. uttering "Secret" Notes.

Just about 1 minute later, a whole group (4 or 5 inds) of small birds  
moves thru tree-tops in same direction. Only individual identified is a



Blue & Black. Possibly these birds are following the Treebellies at a distance. Right behind them, is something condensed, moving through low scrub. This whole thing presumably a real mixed flock. Very diffuse. But moving steadily and rapidly in one direction.

23 6:46. Another Yellow-belly fly. Alone. But going in same direction as other birds.

Do all the birds here just start moving, independently along usual paths early in morning? And then "clump" together whenever they encounter one another?

14 6:58. See single Yellow-belly. Definitely alone. Probably one of the same individuals seen earlier. Feeding on small green fruits in large tree 20 ft up. This tree seems to be same species which occurs over much of Andes. If so, I have also seen Loers eat the fruit. Yellow-belly utters lots of "seet" notes. Then flies off.

See single Sooty Thrush alone. Bright eye ring. Feeding on fruit scrub 6 ft up. Silent 7:06 a.m.

3 Going down to where mixed flock seen yesterday 7:18 a.m.  
See single Yellow-belly alone. (This species is very reminiscent of the Treebelly in most notes and all actions.)

11 See a single White-bellied Flycatcher alone. And a single Ocellular alone. See a single Sooty Thrush (dark eye ring) apparently alone. Joined by another. (These may be ♀ and juv. seen yesterday)

12 Hear Scans around 7:30 a.m.

See another Sooty Thrush alone. Joined by another (dark eye ring). In trees 30 ft up.

13 7:37 a.m. One GT flies in and joins another high in tree. Utters loud series metallic notes in flight "Tā-ah tā-ah tā-ah tā-ah....."



Then one or both birds utter (s) variety of loud sounds in tree. Much noisier than I have ever heard them with flocks. Then both fly off up hill. Apparently alone

The thrushes around here seem to be disputing. Very noisy. Single Sooty Thrush seen (again) 7:40. (Still) alone

Alm 19 No sign of ♀ Albi where she was yesterday. Then she suddenly flits by 7:54. Alone and silent.

See juv. Sooty Thrush alone. Then parent appears and the two fly off together

70 Going on down hill. See single Agelaius-type in flight alone. Also 5 or more Orestias alone

Then Dubusia region verges forest 9:00 ft

Alm 21 Going up hill again. Then see single ♀ Albi. Feeding tubular red flowers very low obviously second growth scrub. Alone. Certainly not the same individual seen yesterday. Scrub edge high virgin forest. Very humid looking. Not at all "alpine" in appearance. (No small treed trees, etc.) In shade.

76 See another White beard alone. High in tree tops. Then see that there is an enormous mixed flock quite near the White beard. At first moves very rapidly up hill. (When I first saw flock, I was at 9:25 ft) Then down hill. Group moves very fast. Very well coordinated

Includes at least the following: 3 Bettis (adult per plus young), one bird feeds another, 1 ♂ WCC, 1 Ag (definite), 2 Cnemidophorus, 1 Cyanocapla, 1 BT, 1 PL Atlapetes, several flycatchers and several Juncoids, at least 1 Yellow-faced Whitestart. (Definitely no thrushes, Yellow-bellies, BYB's, Blue & Oranges, or Bulfinches.)

Although the flock was so rapid and well coordinated, there were



Little  
Cy  
no no regular, consistent leaders. Twice the GT was in the lead. Twice the fitties were in the lead. Once the R. was in the lead. Once the Cy was in the lead. Once the Cnemidopus were in the lead. I.E. some of the birds were following all the time. All the others were following most of the time.

Little  
well  
Cy  
The diglossines (all 3 species) definitely tended to stick particularly close together. The small furnariids tended to stay close to the diglossines.

Little  
Scam  
Cy  
At one point, a single Scam came and sat on a perch about 30 ft from nearest members of flock. Then flew away. Very Raptor Hummer-like. The local Abi(s) did not appear at all.

13  
Altho I never saw a Dulcinea, I am sure, from sounds that it was following flock. Definitely to the rear.

All the observed birds, except the GT, stayed high in trees, 20-30 ft above ground during the whole period of observation. This is an area of what looks like natural sub-tropical forest; but rather broken up by a fair number of fallen trees. The GT consistently stayed lower than the other birds. 10-20 ft above ground.

Cy  
Flock as a whole noisy. The Cy sang steadily throughout all the time it was with flock. Song phrases with "Tut tut" "Intro Notes" Lots of "CN"s & miscellaneous twitter by many other birds. One of the flycatchers also sang pretty steadily. The GT, however, was quiet.

There were no disputes between any birds at any time.  
Beginning to cloud over 9:05. I will continue up hill.

23  
9:10. See single Yellow-faced Whitestart. In top trees, 20-25 feet above ground. Definitely alone. Correction: It is a pair of Yellow-faced Whitestarts. Eventually, they fly off across road and down hill. After



24 <sup>W</sup> they are well launched, a single White-Bearded Flycatcher, flies up from a patch of vegetation some distance away, and follows the Whiterants for 20 ft. Then the Whitebeard gives up the chase and lands separately. Obviously the Whitebeard has some innate following and/or joining tendency.

9:20 a.m. Fog coming in. See another mixed flock in patch of

51 <sup>W</sup> very dense, natural alpine scrub. Includes 4 Blue & Blacks, 1 Yellow-belly, 2 cyanocephala. Birds flitting about top of scrub. Probably 10-20 ft above ground. Quiet, except for "CW"s. Yellow-belly follows and joins Blue & Blacks repeatedly. cyanocephala f —> Blue & Black at least once.

54 <sup>W</sup> When I first saw the flock, there was a ♂ Albi about 4-5 ft from the Blue & Blacks. (This is an area where I heard R's earlier). But he soon disappears. This would suggest that ♂ Albi also "escort" mixed flocks.

Going on uphill. 9:30. Sun out again, but more patches fog are coming up.

9:45 <sup>W</sup> As I go, I see the 4 Blue & Blacks of the mixed flock flying uphill. They are not followed by anything else. See single Sooty Thrush alone.

Up by the TV Station again 9:50 a.m. Everything very quiet. Some shimmering thin fog.

29 <sup>W</sup> See single cyanocephala alone. Leave 10:10 a.m.

On the way down, see a single Buthorupis fly across road. Certainly alone in flight. But there may be other birds in the trees in which it lands.

55 <sup>W</sup> COMMENT: What in the world do such species as the Pitt



and the Blue and Orange Tanager do when there are no mixed flocks around? Especially early in the morning? (It seems likely that mixed flocks do not form until some time after dawn.)

Presumably Blue & Black's are not very "successful" as gannet nuclear species (i.e. are not always followed by other species) simply because they often take long flights. (The B&B's in Chile qui may be so "successful" because their flights are always or almost always short. Their flights do not cause them to "disappear" suddenly. Their companions probably can usually hear and/or see them, still, after they have flown.

My observations here, this year and in 1962, indicate that every single one of the local species, belonging to the groups in which I am interested (i.e. honeycreepers, tanagers, Whitestarts, and bush finches), occurs in mixed flocks at least occasionally. The only possible exception is Atlapetes brunnei-nucha.

This is really quite incredible!

The behavior of many of the birds here is excellent evidence that the principal advantage of joining mixed flocks is protection against predators. Certainly many of the birds in mixed flocks are not feeding on insects while with the flocks. Only attendant flycatchers make flycatching flights. It's certainly spend all or most of their time getting fruit. So, in all probability, do many of the other tanagers (I have yet to see Butorampus take anything but fruit).

I am not sure that there is anything like a purely tree-top mixed flock here. I think that all the flocks I have seen, so far, have included at least one member who occasionally came down into at least moderately low scrub.



I have twice seen small arboreal, brownish squirrels here. Once fairly low, near the river. Once high, by the TV station. The latter was with a mixed flock.

Out for a walk this afternoon. Came across mixed flock. In rather sparse trees and scrub along stream. Group includes at least 1 Xanthocephala, 1 Cyanoccephala, 1 B7B. Xanthocephala in lead at least part of the time. All in trees 10-20 ft above ground. Uttering "CN" and PN type notes. ♀ Albe J. —————> group, for at least a brief period. This stream about same altitude as Juca.

2:50 pm Edge larger patch forest. Hear a few Laf-like phrases. Presumably the Yellow-faced Whitestart. 8285 ft.

2:58. Up to now whole trip has been in sunshine. Now we reach area where there is fog and rain. Immediately we hear more bird sounds. Transition very abrupt.

See single Sooty Thrush alone. No it is a pair. Region low second growth scrub. Then a third Sooty Thrush appears. Suggests one of the others. 3:16 pm

3:42. See single Yellow-faced Whitestart in high second growth scrub with some larger bird (Sooty Thrush ???). Larger bird flies off. Whitestart stays behind. Then see a large Mittalonus-like flycatcher. —————> Whitestart. Then flycatcher moves on; Whitestart does not follow.

4:03. Region thick second growth scrub, between forest and pasture. See single "Glauc". Flitting about low in scrub. Apparently looking for insects. Also, apparently, probing at base of orange tubular flower. Really, I don't know what this is! Looked chunkier than all or most of WCC's. I didn't see the bill. But this bird did have prominent white tufts on, more likely, white axillars and/or whole underside of wing. Cons



(22)

previous during WF's. I am pretty sure that the "Glauc" seen a couple of days ago has similar white "flashes" (Actually, at first I thought this bird was a ♂ Allis. But it was definitely blue-ish. Dull and dark. There was a little fog at the time; but I would be surprised if moisture on black feathers would produce such a blue effect.

Stop observations 4:30 p.m.

5:25. Go to small forest where first "Glauc" seen. Weather is clear now, here, and everything is very quiet.

See Sooty Thrushes coming in to roost. 5:25-5:35. First 3 individuals, then 2, then 1. All apparently going into same tree.

Leaving 5:48 p.m.

COMMENT: Why is it particularly advantageous for the birds in the Western Cordillera to form mixed flocks for defense against predators? Are there more predators here than in most other parts of the Andes? (Do predators come up from the lowlands more frequently here?) Or is it that the very humid forest and scrub here is noisier than in most other places (constantly dripping water, etc.)?

May 3, 1965  
Munclique

Arrive place where I heard Laf-like songs yesterday 5:40 a.m. 8600 ft, 2710 m. Region obviously second growth scrub along road, a few scattered old trees further back. Warm clear. Just getting light. Everything rather quiet at first.

First Laf-like songs, short phrases 5:42. General amount of bird song building up.



Just Atlapetes Whistle song 5:46. Not overlapping anything.  
Then more Laf-like song (which must be Whitestart, I think — phrases  
is never prolonged).

There are some small reddish Flycatchers here. Uttering R's rather  
er like those of Albes, but lower and louder

5:52. See single Sooty Thrush alone

Burst of slower songs about over 5:38 a.m. Is probably the birds  
are aren't breeding

See another single Sooty Thrush alone. And another.

Lots of hummingbirds around here too

Still an occasional Laf-like song 6:07 a.m.

That excited mountain cotinga is here! Single bird, alone

A pair of Sooty Thrushes fly alone 6:15 a.m.

One or two Atlapetes rufinucha in very low scattered scrub on  
land slide. Uttering "seet"s. Then, I see what is obviously a Black De  
glana, with humeral patches, fly out of the scrub in which the rufinucha  
cha are cowering and fly to another patch some distance away. The rufi  
nuchas do not follow.

This area is exactly 8650 ft

See (another) cotinga alone 6:27 a.m.

This whole landslide area seems to have a fauna more similar  
to faunas with which I am familiar in other parts of the Andes than the  
other parts of this mountain

6:42. Region of second growth trees and bamboo edge of another  
slide, same altitude. Some bird giving Laf-like songs. All short  
phrases. Obviously intermittent. But unfortunately, I can't see the bird.  
I never can! I wonder who can be giving these songs.



Each Laf-like phrase might be transcribed as "Zee gee to wee to  
32"

Turning cold, wind and cloud coming up, 6:30 a.m.

7:10. Catch glimpse of Cy (definite), with one other bird, in  
tangles and trees region of lucid vegetation 30-40 ft up. Uttering some  
Twitter. I think the other bird is another Cy, so perhaps Cy is not an obli-  
gate commensal after all!

7:20. See another single footy Thrush alone

7:40. See a single individual of one of the flycatcher species that  
it was with the big mixed flock yesterday. This individual today is alone.  
Seen receding this area 7:50 a.m. But wind getting stronger and  
stronger.

8:15 Another brief Laf-like song, in an area where I also  
heard them earlier. Sand dune edged with fagg high and thick ground gr-  
owth. Then see mixed flock. Composed of two rafinuchas and 3 Yellow-  
faced Whitestarts. Whitestarts flitting about actively in usual way.  
Ranging 1-20 ft above ground. rafinuchas ranging from ground up to  
10 ft. Whitestarts quite silent while I observe them. No Laf-like songs  
while group is present (This might suggest that Laf-like songs are not  
uttered by Whitestarts.) rafinuchas noisy. Lots of "feet" Notes.  
Also "Tut"s when near me. rafinuchas repeatedly follow the  
Whitestarts.

If rafinuchas will follow other species in this particular area,  
which is so depauperate in both species and individuals, then they must  
have a definite following response. I.E. the behavior of the local rafi-  
nuchas is qualitatively different from that of the birds of the same spec-  
ies near Quito.



8:00 (3) When the group first appeared, a Scops came and perched a few feet away. Then flew away. Again, very Diglossa-like.

Incidentally, all the rufopectus seen here have had white spots on wings.

See single Cotinga alone again. Same place as before 8:42 am.

8:55 Flycatcher different area. See single rufopectus in low scrub. Edge of land slide. Apparently alone.

Apparently rufopectus prefers more scattered scrub than the PL or the PR.

41 Then I see that this rufopectus is really rufopectus of a pair. One or both utter(s) Twitter Quittings!

I wonder why I haven't seen any B. nigrocrinitatus around? There are quite a lot of bamboo around, in spots.

40 See a single Aquionis-type. Perched on low-branch mixed second growth and old tree area. Alone.

9:12. See single Scoty Thrush alone.

42 9:19. See pair Yellow bellies in tree edge low scrub. Alone.

43 9:23. See pair Ammodramus ruberpectus, probably with other birds, lower large tree edge low scrub on landslide.

Leaving 10:03

NOTE: The observation of rufopectus in a mixed flock this morning really was very important. If I ever found an area in the Western or Central Cordilleras with a depauperate fauna in which the species behave as they do in Quito, I might have to revise (or drop) all my hypotheses about frontiers, invasions over gaps, etc.

Incidentally, it might be a good idea to stop using the term "invasions over gaps", and to use "sudden invasions" instead (???)



The term "sudden invasions" may be contrasted with "gradual invasions."

It rains after lunch. Stops. Then I start out for the Ranchito. ca. 2:20 p.m. On the way up, I catch brief glimpses of distant birds in tree-tops. But nothing like mixed flocks seen April 30th.

2:42. See single "Acorn" Woodpecker alone

Sun starts to shine just as I reach woods a few feet below Ranchito. Woods full of "Acorns". Also lots of small birds which I haven't identified yet. Altitude here is 2550 m., 8190 ft.

2:58. See group 4 cyanocephala. In low trees, obviously second growth, edge forest. Very noisy. Lots of twittering cy. like song phrases. Rattles in flight. Definitely alone. (There is a large Psittacus - like flycatcher in one of the trees visited by the tanagers. But the two species seem to ignore one another. Flycatcher does not follow when the tanagers move on.)

"Acorns" all over the place. I won't record them unless they show some interest in mixed flocks. Surprisingly enough the "Acorns" are making many flycatcher flights.

49 Then we diffuse flock in long strip mature forest. Includes lots of flycatchers and tree-crawlers, 1 Red Woodpecker, 1 Yellow-faced Woodpecker at least 1 Chlorospingus canigularis, 1 Blue & Black, certainly others. Tree-crawlers in last part of the time. The Blue & Black flies off after only a minute. No one follows. Flock utters lots of "CN"s. Little ch. Birds ranging 20-40 ft above ground.

Two squirrels may flock at one time. One in trees to rear. One on ground at sides. Both generally brownish all over. Perhaps with slightly more russet tails.

Flock moves on 3:15 p.m.



Now everything very quiet and calm

3:45 pm. The weather is perfect now — and there is no sign of life anywhere! I think that it is pretty well established now that good weather (i.e. sunshine — and presumably heat) has a depressing effect on mixed flock formation while bad weather (i.e. fog and rain — at least not too much rain) has an encouraging effect. (I don't know the effects of strong wind per se.) This presumably is further evidence that there is no selection against the formation of mixed flocks here. (Vide the contrasting situation in the Eastern Cordillera and the Sierra de Toluca.)

Presumably, both the noisy group of cyanocephala and the mixed flock seen when I first arrived here this afternoon were "after-effects" of the preceding rain and/or cloud cover. Bad weather probably stimulates intra- as well as inter-specific flocking.

The "Acorns" are still around everywhere. But they don't seem to be really flocking together. At least not forming groups larger than pairs or families.

Some bird songs starting 4:23 pm. A couple of birds uttering "Ja zee zee zee" phrases. One of the Whistlers species ???

Nothing more. Leaving 4:48 pm

Just as I start to go, see Cy in tree, 30 ft up. Apparently looking for insects in bark and moss. About 6 ft from a pair of "Acorns". One of the "Acorns" flies at, attacks, and chases the Cy! Cy comes back. Now I see there is a pair of Cys. Three more times, during the next few minutes, one of the Cys is supplanted by an "Acorn"!!! Obviously hostile supplants. And each time the Cy comes back to the tree to resume feeding. Does nothing but probe into bark large branches. No attempt to pick insects off leaves. (And there are no flowers in this tree.)



Obviously "Acorns" do not like being joined. There is no reason they should object to Cys personally.

Leaving again 5:02 p.m.

On the way back, see single sooty thrush alone. And another 5:17.

2.1 See single G-T flying from tree to tree in valley below our camp apparently alone.

May 4, 1963  
Munclique

Arrive top mountain 3:50 a.m. Just light. Sun not out yet. Clear. Cool. Windy.

Scam  
4:5

Hear Scans "Sungay" up here at very top.

Also see single G-T fly alone.

Not much song. Some thrushes and sub-oscines.

Scam

See a real Scan display flight. First one seen this trip. Perhaps the Scans here are in full breeding condition?

See single sooty thrush alone 6:01 a.m. On log edge scrub. Dark eyes seen.

No trace of Luf-bell's song.

Summit here is 9500 ft according to my altimeter now. 2980 m according to the Rockfeller altimeter.

See another single sooty thrush alone.

Scam  
174

177

6:13 a.m. See mixed flock. At least 3 Blue & Blacks, 2 Yellow-bellies. Feeding small trees top alpine scrub, 5-15 ft above ground. Apparently taking small white flowers. Yellow-bellies uttering lots



(23)

of "Forest" Halls. Yellow-bellies & ————— Blue & Black. A single footy Thrush across road does not join the group.

Seen up 6:21 a.m.

Blue & Black and Yellow-bellies seem to be the only tanagers which range up into the alpine scrub with appreciable frequency. See another single thrush alone. Light eye ring.

Clouding over 6:31 a.m.

44 Well! Well! 6:35. See single Cy (definite) Alone. In tops trees edge alpine and upper sub-tropical forest. 9400 ft according to my altimeter. Apparently looking for insects, leaves and twigs. Silent 15-22 ft above ground. Flies off almost immediately. Then I hear burst Cy-like Twitter some distance away. So Cys may range slightly higher than Albes!

Going down the road to where the forest is higher and most of the mixed flocks are 7:00 a.m. Seen out again.

See single footy Thrush alone. And another. And another. See a couple of Outhrops alone 7:10

45 7:20. See single Blue & Orange. In mature tree 20-25 ft up. Silenced. There is another small bird in adjacent tree, 10-15 ft away. Can't tell if it is reacting with the Blue & Orange or not. But then the Blue & Orange goes down into tangle. Feeds 4-10 ft above ground. Other bird does not follow. So now Blue & Orange definitely alone. So perhaps not absolutely obligately commensal!

46 A little further on, see single Cy alone filtering "Tact"s 15 ft up in small tree. Just above where first ♀ Albi seen! Then it, apparently (from sounds) flies into tree 20 ft away, where there is a Yellow-belly.

47 It is quite possible that this Cy, Yellow-belly, and the Blue & Orange are members of a different flock. Or, at least, in process of assembling to for



in a mixed flock.

See more single footy Thrushes ✓✓

17:26

17:35. Further down road. See single Blue-Orange. Probably same individual as before. Feeding 6-15 ft up in scrub and tangles mature upper sub-tropical forest, esp. under tall trees. Definitely alone. Silent. Then it is joined by another bird (another Blue-Orange???) Then it is followed by ♂ Albi. Then ♂ Albi flies off in another direction. Blue-Orange f → ♂ Albi! Both disappear.

Then see what is apparently single Hemiprocne superciliosa in low-wood growth scrub across road. 9425 ft. Uttering "CN"s. Apparently alone (Except for hummingbird 5 ft away. The 2 species ignore one another).

It is cold here this morning!

7:50. Flush near Alapetes torquatus region fairly old second growth. Definitely alone. Many "mob" no. "fat" notes, bowing & pivoting, TF's, perhaps TV, with CR and H fluff

Then see single footy Thrush alone.

See single squirrel 8:10. Definitely alone now. But not far from where large mixed flock was seen the day before yesterday. Moderately small. Small rounded ears. Head, back, sides, outer sides limbs yellowish-greyish-brown. More rufous underneath and inner sides limbs. Also tail. I wouldn't be surprised if all the squirrels I have seen in the Andes belong to the same species!

Everything very quiet 8:40 a.m. Sun out.

See another single footy Thrush.

9:03 a.m. Back to upper sub-tropical forest just below TV station.

4 Agoutis-types fly by, from tree-top to tree-top. Alone



83  
Cy 23  
Then see single Cy alone. Feeding on leaves of some clinging to tree 10-20 ft up. Using same technique as Cy near Merida. This undoubtedly is the same individual seen above of Alb's territory earlier this morning.

84  
Cy 24  
See a bean (definite) feeding on yucca and tubular flowers which is very common almost all over the Hummer region; but which the local Diglossini seem to ignore.

85  
Cy 25  
See single Yellow-belly moving thru very low exposed second growth and brush piles. Only a few inches above ground most of the time. No fruit along. Uttering "Seet" Notes.

86  
Cy 26  
9:45. Alpine scrub or forest below TV Station. Area where Cy seen first this morning. Hear Diglossini song. Intro Notes and Twitter. Twitter perfectly typical Cy. But Intro Notes "seee seee". No trace "Tut" or "Tut". Unfortunately can't see bird — but it must have been a Cy.

87  
Cy 27  
I must say that I do not understand the variations in songs of Cy and Coere different areas.

88  
Cy 28  
Then see single Yellow-belly alone.

89  
Cy 29  
10:05. See single darkish Diglossini in low brush, right at top of mountain. ♂ Alb?

90  
Cy 30  
Leave 10:15 a.m.

91  
Cy 31  
On way down, region up tall second growth on old slide, see mixed flock. Includes at least 2 Ammeraspus adults and 1 juv. same species (Bogging). Probably, in fact, includes at least 5 or 6 Ammeraspus. Also 2 Yellow-bellies, 1 Yellow-faced Whitestart, 1 Chlorospingus canicularis, 1 small Eudry flycatcher, 1 small furnariid, 1 Lette. Probably also 1 or 2 Wcc. Yellow-bellies definitely in lead. Ammeraspus follow right after them. The rest trail along behind. All 5-15 ft above ground.



nd. Flock as a whole noisy. Lots of "CN"s. Also juv Cuculiceps begging very loudly and constantly. 8700 ft

See group again a few minutes later. Yellow-bellies seem to have disappeared. Now the Cuculiceps are in the lead.

Group very coherent. All birds close together and moving rapidly

Orocast and windy now

WCC 95 Follow group a little further. At last one Yellow-belly has "re-appeared". Also note that there are 2 ♀ (or juv.) WCC's with group. At one point ♀ WCC in lead, followed by Yellow-belly, followed by Cuculiceps.

Group disappears from sight 11:30 am

94 Going for a walk this afternoon. Reach region where second "glance" seen the other day 3:15 pm. 8250 ft. Fog coming in. Get brief view of mixed flock in tall trees, apparently mature, edge pasture. Most birds 30-40 ft up. Indistinguishable. But with the flock is (are) 1 or 2 GT's. Lower than the rest. In branches 20-30 ft up. These GT's certainly are not the leaders of the flock. Follow the others

After flock leaves, I see there was a squirrel in one of the trees in which the birds fed. Usual species. It did not follow the flock, at least immediately.

I suppose that one of the principal advantages of mixed flocks in a very humid mountain environment is that the members have a better chance of seeing (as well as hearing) predators. A flock must be able to see further and wider in a fog than a single bird.

3:45. See a single Sooty Thrush alone.

3:53. A little further along road. Catch glimpse another mixed flock. Includes at least 2 cyanocephala, 1 flycatcher, probably others. Also



100

1 Yellow-faced Whitestart, to the rear. Young flock moves off and he appears.

101

112

113

4:15 p.m. Come across yet another mixed flock. In second growth scrub (including bamboo) and occasional mature trees along side of road. ~~Whitestart~~ seen, all birds on one side road. Group includes: at least 3 Cnemidophorus (probably about 6, in fact), at least 1 Chlorospiza, Myiopsitta, 3 Yellow-faced Whitestarts, at least 1 Formicivora, 1 Ruddy Flycatcher (same species seen with flock this morning — LXXXVII), and three presumed Hemiprocne superciliosa (same species seen this morning — LXXXVIII). The presumed Hemiprocne low in scrub. All others in trees, 10-20 ft up. Cnemidophorus definitely leading (This may be an extreme juvenile nuclear species.) Flock very coherent and moving very fast (like Cnemidophorus flock this morning). Also very noisy. Lots of "CN"s. Lots of twitters - rather Cy-like, but louder and more wheezing and less musical. (If these were uttered by the Whitestarts — as I rather think they were — then it probably is highly significant that they were not at all Laf-like.) One of the presumed Hemiprocne apparently juvenile. Uttered lots of hoarse notes in rapid succession. Apparently Begging. All in all a regular cacophony!

After some minutes, the flock split up. The presumed Hemiprocne flew across road. Continued feeding in very low scrub. Moving in same direction as rest of flock still across road. The presumed Hemiprocne certainly were followed by 1 Whitestart, but apparently nothing else. And the Whitestart soon left them.

After some minutes more, the presumed Hemiprocne flew back across road. Apparently rejoining rest of flock. But this time I lost sight of the whole group.



It was quite foggy throughout the whole period I had this group under observation. Also warm and windless. There would seem to be ideal conditions for the formation of mixed flocks.

I wonder if there are any special interspecific preferences involved in the Cnemoscopus - Chlorospingus canigularis relationship?? The two species are remarkably similar in coloration, and not very dissimilar in pattern. (The presumed Hemispingus superciliosus might also fit into this tight little group.)

I wonder if the Ruddy Flycatcher has a special interspecific preference for Cnemoscopus? (It was certainly moving right along with the group this afternoon. Nothing at all casual about the association.) It seems to me that the only mixed flocks I have seen it with have also included Cnemoscopus. Certainly it sometimes occurs by itself alone here, quite apart from mixed flocks. (I think I have also seen it alone in other parts of the Andes.)

Going down back road. Fog thickening. Back spot where "glau" was a couple of days ago. 4:55. Find another mixed flock. Whole group of birds mopping their second-growth scrub, 2-15 ft above ground. Including 3 Yellow-faced Whitestarts, at least 2 Chlorospingus canigularis, 1 Blue & Black (!) Chlorospingus in lead. Both Chlorospingus and Whitestarts noisy. A Sooty Thrush joins the group. Lands in tree 20 ft away. Then seems to disappear. From the fog, I can also see some larger birds moving thru tall trees, behind, parallel with the scrub-group. Presumably members same flock. But I can't identify any of them.

"Glau" appears, very briefly, in scrub after group has moved on. Also a reddish Synallaxis. Neither shows any desire to follow group.



The raven's mixed flocks seen this afternoon have been only a few hundred yards apart. They are thick upon the ground. Certainly different mixed flocks occur closer together here — when conditions are right — than anywhere else I have ever been (even Chiriqui)!

It is still relatively warm and without wind, 5:20 p.m. And fog is just as thick as ever!

After the flock had moved on, I heard some Cy-lili songs here, but wasn't able to pay much attention to them. Could they have been uttered by the "glauco" ???

Leave 6:00 p.m.

NOTE: I hope that I have not said anything (in the preceding pages) about differences between the social behavior of birds in the breeding season and non-breeding season here. It was the non-breeding season when I was here in 1962.

May 5, 1965  
Munchique

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

6:55, 2:40 p.m. Pigeon few old mature trees amidst scattered scrub.

59 See single Yellow-faced Whitestart alone 20 ft up.

60 7:02. See single Yellow-belly 6 ft up in scrub edge landslide going uphill. See some more sooty Thrushes above. Singles and in pairs.

Pass area where big mixed flock seen late yesterday morning. Nothing there now 7:30.

61 A little further on, came across group approximately 4 White-bearded fly



catchers making a lot of noise in trees.

There also is something in the scrub below them, but it doesn't seem to be paying much attention to them. Or vice versa.

Then I see that there also are a couple of Yellow-faced Whitestarts in nearby trees. Not close together. One of these Whitestarts is definitely giving Laf-like songs!!! In the intervals of picking insects off leaves.

Whitestarts move on. Nothing follows 7:47

7:56  
8:02. Repeating further along road. Region fairly high second growth. Come across group 3 Yellow-faced Whitestarts. Uttering lots of "Tut" or "Tut" Notes. No song. Associated with lots of other birds. Fly across road. In this order: the 3 Whitestarts, 2 Ampelis cedrorum, 1 Thraupis cyanocephala, 2 more Yellow-faced Whitestarts (!), 1 Isabelline Flycatcher, a couple of birds I didn't identify, and 2 Synallaxis. All rapid. Flackney coherent. rufinucha utter lots of "Tut" Notes. Other birds quiet. (This is uphill from where rufinucha were seen to follow Whitestarts the other day. But I think that the first 3 Whitestarts and the 2 rufinucha may well be the exact same individuals. I. E. a really long-maintained association!) After crossing road, group moves on rapidly. rufinucha usually low, 2-6 ft above ground. Synallaxis so low as to be invisible. Whitestarts usually 4-15 ft up. Eventually, one of the Whitestarts gives some Laf-like song phrases. Then shuts up. As the group continues thru the scrub, the rufinucha seem to fall further behind in relative position within the group. Note that they seem to be bringing up the rear. But they still follow steadily along in the same direction as the group. These individuals definitely are active nuclear.

8:25. A little further along road 2750 m. Come across 2 adult



161 It and 1 young Butoromys cucullatus. In trees, region of scattered veget-  
ation. Usually 20-40 ft up. Adults hitting into large fruits, taking big  
chunks out of the fruit. At least one, adult feeds young. All very noisy,  
y, PN-type notes, R's, and hoarse Begging Notes by young. Group as  
a whole very, very conspicuous. But certainly, nothing shows any ten-  
dency to join them. I suppose this species is so large that it is really intimid-  
ating.

Follow group for some time. Still alone 8:40

162 Then see single Cy in tall tree 40 ft up. Singing. Long whistles. Some  
Twitter with 1 or 2 "Int" Intro Notes. ~~Some definitely without~~. Bird app-  
arently alone. Conclusion: It is a pair of Cys alone. (All songs without Intro  
Notes particularly likely to be given as "Greetings", while songs with Intro  
Notes are more apt to be given by isolated individuals? I rather think so.)

163 Then see single Yellow-bellied in bamboo scrub 30-50 ft from Cys.  
109 8:55. Catch brief glimpse of Hemiprocne superciliosa - types  
(LXXXVII). In Bamboo scrub. Definitely accompanied by Ruddy Flycatcher  
or (LXXXVII).

164 9:14. See pair Yellow-bellied. Apparently alone. High up tall tree,  
50-60 ft above ground.

Incidentally, it has been clear and sunny all morning

165 9:20. Come across mixed flock. Includes 1 pair Hemiprocne. Defini-  
tely same birds seen earlier, 8:55. But now I get a much better view of  
them. They definitely are not superciliosa. And they definitely are atro-  
piceus. Moving up and down trunks on trunk large tree, and in bamboo-  
thickets, 5-20 ft above ground. Very noisy, uttering a great variety of so-  
unds. Still associated with Ruddy Flycatcher. In fact, now I see there are  
2 Ruddy Flycatchers here. Ruddy Flycatchers repeatedly f ———> atro-



11/3 pileus. There also are 2 Yellow-faced Whitestarts with group and 1 Yellow  
11/3 belly. Some Whitestarts f → atro-pileus. One Whitestarts f →  
→ Yellow belly. Yellow belly seems to leave group soon.

11/3 In some trees about 20 ft away from this flock are two Eys.  
(The ones who got involved in chase. Probably the same as the ones involved in  
"Pounce" incident earlier.) They do not seem to be paying any attention  
to the flock. Fly off separately.

Going down hill 7:50 a.m.

9:56. See small group of 2 or 3 Yellow-faced Whitestarts in low scrub.  
Also hear rufuncula-like "fret" notes nearby. Probably same group seen  
before.

Leaving 10:20 a.m.

NOTE: Although it is supposed to be the full rainy season  
here now, I have certainly had beautiful weather throughout my stay  
with the partial exception of the first day (April 30th).

Going for walk this afternoon. Same places as yesterday afternoon.  
Arrive "Glauco" area 2:10 pm. Fog seems to be coming in, but it has not (yet  
&) reached this area. It is windy here now, alternately cloudy and sunny.  
No sign either "Glauco" or mixed flocks.

Go on along road. Hear some Yellow-faced Whitestart songs 2:22.

Reach area, near crest road, where fog really coming in 2:30.  
Begin to catch brief glimpses birds moving about. Also there is a slight war  
can be heard around.

Going on over crest hill. 2:32. Really foggy here. Some bird sound.

2:40 pm. See mixed flock. Includes at least 2 Sooty Thrushes,

12/11 Ruddy Flycatcher, 2 unidentified tanager types. In second growth trees  
along edge road and pasture.



Catchup with same flock a few minutes later. Sooty Thrushes seem to have left it. Tanager-types still around and still unidentifiable. Reddy Flycatcher still there. In fact, there are two of them. And they definitely are following.

Fog lifting temporarily 2:35 pm.

124

Then see that there is a small woodcreeper with flock.

Fog back in 3:08. Immediately, there is an increase in bird sounds. Increased vocalization in fog must help to keep birds together.

3:15. See single Sooty Thrush alone single tree edge pasture. And then another (?) in similar location.

Hear what sounds like Dubusia in distance 2:53 pm.

Back to crest of road 3:34. Going to work in same areas as yesterday afternoon. Unfortunately, there is no fog here now. Everything very quiet. Some more bird sounds 3:50, just before fog starts to come in again.

Then fog goes out again.

Back to "glave" area 4:05 pm. Clear, sunny (altho this spot is in the shade) and (naturally) windy.

The contrast between the bird life in this area yesterday and today is simply incredible. Absolutely conclusive proof of the effect of weather.

It has just occurred to me that during foggy or rainy weather one sees more single birds as well as more flocks. I.E. the birds not only join together but also "emerge" more frequently during bad weather. Is this because they have to look for more food???

It also occurs to me that I saw many and relatively large flocks on April 30 and May 1, when the weather was not very bad. But this was, I think immediately after a period of bad weather. I.E. Bad weather produces an aftereffect. Increased activity in order to get more food to make up for a few



A deficit ???

135

4:17 There are now some birds high in tree tops here. But I can't identify any of them. Ah! One of them is a Cy. Flies on ahead of others. Sings in large tree 60-70 ft up. Altitude here is 2350 ft. I think this is the lowest I have seen Cy in this region. Cy apparently looking for insects in bark and among epiphytes. The other birds apparently do not follow the Cy.

Cy territory here probably overlaps territory local "glave" too.

141

4:35 See another mixed flock in distant trees. Includes small warblers and/or flycatchers, at least 1 Yellow-faced Whistler, probably others. Yes! There is a pair of Cnemidophorus with group. At least 30 ft up in second growth tall near some mature trees.

See single Sooty Thrush alone

Leaving 5:00 pm

On way back, see pair Sooty Thrushes alone in "hedge"

NOTE: It appears that they keep rainfall records here! Looking at the record, I see that there was a great deal of rain here the week before I arrived. April 22-30 inclusive.

May 6, 1965  
Munchique

Arrive Area just below where Cys seen yesterday 5:40 a.m.  
Clear. Wind, but only in spots. Already light. A few Whistler songs, but things generally quiet.

See a single Sooty Thrush alone.

A little more bird song 5:50 a.m.



Arrive Cy area. No typical Cy songs audible. Something resembling "Tance tance tance" phrases in top tree. Cyanocycla?

Lots of birds vocalizing in scrub around here.

See another single Sooty Thrush alone 6:01. In tall tree.

Whitetails still singing occasionally. Tend to alternate with bird uttering "Tance tance tance..." phrases!

Now generally less 6:07 a.m.

6:13. From the road, there is a mixed flock down hill in rather open scrub. But I can't see birds.

Now Sooty Thrushes alone! 6:21.

1146 See pair GT's, 6:28. In second-growth and mature trees both. 12-30 ft above ground. Quite noisy. But definitely quite alone.

118 See mixed flock 6:31. In low scrub. Very open second-growth along edge of road. All birds ranging 1-10 ft above ground. Group includes 2 birds which are either Hemiprocne superciliosa or Basilornis luteoviridis (probably the former - as large as H. atro-pileus, crown apparently slightly brownish - not pure olive, supercilium stripe yellowish or buffy, apparently not pure white but not pure yellow either), 2 H. atro-pileus, 1

121 Atlapetes rufinucha, 1 Yellow-faced Whitetail, 2 Ruddy Turnstones, and

124 2 large woodpeckers. Group very coherent. The H. superciliosa or B. luteoviridis types always in lead. The rufinucha follows them particularly closely!!! The H. superciliosa - B. luteoviridis types are very noisy throughout so are the H. atro-pileus. The Whitetail sings occasionally. Other birds utter only "CN"s and "PN"s.

After a few minutes, the H. superciliosa - B. luteoviridis types fly across the road. Followed by all the other birds, except the atro-pileus.



The latter remain behind and apparently disappear.

6:57. A single Cy flies by them low scrub, passing behind flock. Shows no tendency to join group. This is where Cy was seen carrying a m. yesterday. Was this bird low because it was going to nest?

6:58. Single Yellow-belly flies thru tree-tops across road from flock. Passes within 40 ft of flock. But (also) shows no tendency to join it. Flock has now moved up hill. Also higher in vegetation. 15-20 ft up, in bamboo and tangles on trees. Now some birds at least 35 ft up! Still very noisy. But birds very difficult to see now. Going to leave group now - 7:02.

See pair of Yellow-bellies alone High in trees, 40-50 ft up.

7:10. See another mixed flock! Only a few hundred yards up road from the other flock. This group is enormous. Includes at least 2 H. superciliosus - B. luteoviridis types, 2 H. atropurpureus, 1 rufinucha, 2 or 3 Yellow-head Whitestarts, 2 Cys, 1 Yellow-belly, 1 or 2 Western Tanager (see!!!) in full plumage, a variety of wood creepers. Probably also at least two An. cuculoides. Birds extending from tops tall trees to low scrub only a few inches above ground. Possible to recognize two semi-distinct sub-groups. A tree group: Including Lillies and Wood creepers all the time; and the Yellow-belly, the Western Tanager, and the Cys most of the time. Also a scrub group including the 2 Hemiprigna types, the rufinucha, and the Whitestarts. But the two groups overlapped. Once the Cys, the Yellow-belly, and the Western flew down into very low scrub, only a few inches from ground (possibly joining the H. superciliosus - B. luteoviridis types) and fed there for some minutes before going back to trees.

All birds feeding on insects all or most of the time. Pushing them off



leaves, probing in bark, etc. etc. Only one exception observed. One Cy probed into small cluster tubular red flowers in tree, apparently getting nectar, for some seconds.

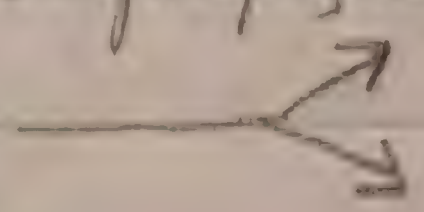
Flock as a whole very noisy.

Difficult to tell who was leading the flock as a whole. The tree and scrub groups or sub-groups advancing parallel. I couldn't tell if one sub-group was ahead of the other or not. The H. superciliaris - B. luteoverdes type certainly were the leaders of the scrub sub-group. The White-throats, rapum clia, and H. ateo-pileus followed repeatedly. Leadership within the tree sub-group seemed to be much less constant. The Sittis appeared to lead more frequently than any one else.

Perhaps the "particolored" plumage of the Sittis is an adaptation to leading flocks (at least when no other natural leaders are present)?

There certainly were no WCC's in this group. I think that this is the first time I have ever seen the Sittis here when WCC's were not also present.

The Cys showed no tendency to associate particularly closely with the Sittis. Sometimes followed Sittis, but at a distance — and when there were other birds between. The Cys may have shown a tendency to associate with the Yellow-belly (both with blue). The Western Tanager and the Yellow-belly also may have shown a tendency to stick together (both with yellow!).

After some minutes, the two sub-groups, the tree and the scrub, split up and went in different directions!  Both disappear from sight.

COMMENT: Altho it is often possible to recognize distinct tree and scrub flocks here, they are not as well segregated as in some other parts of the Andes. There are a number of species (e.g. the Yellow-belly and the Yellow-fa



ced Whistlers) which range from very high to very low. There also are a number of species (e.g. the GT and Cuculoscopus) which obviously prefer middle heights and thus tend to bridge the gap between high and low. Thus the flocks here are quite comparable to the higher altitude flocks in Chiriqui.

Thinking it over, however, I must say that flocking behavior here seems to be even more highly developed than in Chiriqui.

Occasional clouds coming up 8:00 a.m.

8:10. Everything very quiet now. All the birds in the area seemed to have been "sucked out" by the departure of the mixed flocks.

All the birds except Footy Thrushes? See single Footy Thrush alone. Also hear some White-bearded Flycatchers. High in trees. Apparently alone.


Incidentally, when the big flock split up, the tree sub-group went down hill while the scrub sub-group went uphill.

I wonder how many flocks there are on this mountain ??? Probably less than one might suppose from reading my notes. Each flock probably covers a very wide area during a morning. And I have probably encountered the same flocks in many different places.

Well! Well! Down road a bit. See single Atlapetes brunnei-nucha in low scrub, new mound growth on land slide 2730 m. 8810 ft. Bird definitely alone. Uttering "fret" notes (very rufinucha-like) and soft "Tut"s.

See a couple more Footy Thrushes alone 8:45 a.m.

8:59. Catch glimpse bird low in very dense scrub edge slide. Uttering "fret" notes. Definitely not Atlapetes. Must well have been large Diglossa! But appeared to be all black, without humeral patches!

Black  Then catch another glimpse of a Black Diglossa-like bird in scrub on the slide itself 9:10 a.m.



#66

9:17 See single yanocphala fly by alone. In low-scrub

9:27. Again catch glimpse small black bird in scrub-edge landside

I suppose that it is by no means impossible that both Floris and Albi occur here in the same habitat (?)

Leaving 9:45 a.m.

After getting back to the Finca, I can see that clouds are piling up and the wind is increasing. The weather obviously is about to break. I have been lucky all during my stay here!

This afternoon going to take a look at the little wood where the peculiar Slate-Throat-Thrush flock was seen last week. Arrive 4:00 p.m.

Sky slightly overcast, but weather very good. The wood seems absolutely deserted, except for a single Scam (which soon moves off)

4:20 p.m. Hear soft R's or Trills down inside forest. Go down myself.

Unfortunately, I can't get very close (a fence in way). But catch one brief glimpse darkish Diglossa in patch low scrub edge wood. In bush with tubular purple flowers. Same species in which I have seen Scams feed.

And there is, in fact, a Scam in this particular bush too. I think that the Scam attacks and drives off Diglossa !!!!!

The R's or Trills uttered here sound very much like Albi. But possibly softer and even more rapid.

Alia! Finally work my way down into forest. R's start again. The nearer I get to the bird giving them, the more they sound like Albi R's. Most are simple R's. A couple uttered when I am particularly close to the bird have one or two introductory notes. Then I see the bird. Definitely Albi! At first in low scrub under trees. Then flies to bush and small tree with purple flowers. Feeds on flowers there. Possibly also berries. Now



466

I am quite certain that this ♂ Albi is the same as the "Glance" I saw last week. Upperparts are sort of sooty, flanks definitely grayish. Can look quite blue in right light. Bird feeds in tree for some minutes. Uttering lots of R's without intro notes from time to time. Then moves downstream.

Albi 26 Approximately 1 minute later, a ♀ Albi appears. Feeds in same tree and looks in same way. Quite silent, except for occasional "Tut" note.

Albi 27 This confirms what I thought before. Mated ♂ and ♀ Albis share the same territories, but they do not go around close together. (This sort of arrangement may be common in carbonaria s.l. and lafrugayei s.l. also.)

Albi 28 The ♀ feeds in the tree for at least 3 minutes, probably more. Then, suddenly, a Scan appears in a tree approximately 10 ft away. And the ♀ Albi just vanishes. I don't see her leave, but she certainly must have gone. A few seconds later, I see a Scan (probably same individual) feeding in tree with purple flowers, just where ♀ Albi was earlier. Then I lose sight of the Scan. Only a few seconds later, see ♂ Albi feeding same place! Then I see sudden clear. Scan certainly involved, but I can't identify other bird. But the ♂ Albi disappears at same time. So I think the Scan must have been the pursuer and the ♂ Albi the pursued. In any case, none of the birds returns during the next few minutes.

Leave 5:00 p.m.

The incidents observed this afternoon are significant for several reasons:

- I. It is nice to have the "Glance" problem solved.
- Albi 29 II. It was my impression, earlier, that the Albis probably were largely inquisitorial here. Probably they are. But they certainly will



take nectar from some flowers when "available".

Scans  
Albis  
Baris

III It looks as if the relations between Scans and Albis may be somewhat similar to the relations between Scans and Baris in Bogota. I.E. Scans dominant. Attacking Albis, or, at least, having a "discouraging" effect upon them. (Thinking it over, this is really the only plausible reason why Albis are absent from the Fuica garden, which is so full of lovely flowers, eminently suitable for Diglossas, but which is also full of Scans. Possibly the Scans and Albis co-exist, more or less, in the wood I visited today simply because the area is "marginal" for Scans. Certainly, the population of Scans in the part of the wood visited is much smaller, and much more dispersed, than the population in the Fuica garden.)

Open

It may be worth stressing the difference between the reactions of Albis (and Baris) to Scans, on the one hand, and the mutual avoidance reactions of Diglossini near Quito. The latter keep "out of one another's way", but they do it in such a manner that it is not obvious that one bird is retreating before another. Either they retreat very promptly before the advance of potential adversaries or (perhaps more probably) one bird does not advance until another has already left. Albis and Baris, however, tend to "linger" until it is very obvious that they are being forced "out" by the Scans.

May 17, 1965  
Munchique

Arrive top Munchique 5:45 a.m. Overcast. Fairly warm. Just a little wind. Altitude, today, according to Rockfeller altimeter is 2750+



Not much bird noise. Some sub-omens

See single Sooty Thrush alone

Some small hummingbirds around, but not, I think, Scans

6:00 a.m. This alpine scrub here does appear to be remarkably near-  
ly empty of life!

6:02 Hear what sounds like a couple of Scans display flights. In area  
of very steep slope, almost a precipice, covered with alpine scrub. Behind TV Sta-  
tion. This is where I heard presumed Scans a few days ago. I have not seen  
any Dryobates here (which is not necessarily significant)

6:15. Different area. Hear what sounds like one of the Scans vocaliz-  
ations (Long indeterminate series short harsh notes) Slightly down hill.  
Probably margin upper sub-tropical forest. This probably is not far from where  
a both ♂ & ♀ Albi have seen, and flocks with Conocytus spp., but I can't  
tell if it is really close or not

6:20. Hear what sound like several Scans same area, and slightly  
above (alpine scrub). Again I can't see birds. And again this is an area where  
I have not seen Dryobates. Apparently some Scan display flights in progress  
here too.

Catch one glimpse apparent Scan display flight. Down hill. In approxi-  
mate area where I am fairly sure there are no Dryobates

6:25. Hear Albi-type R in scrub fairly near road. Then catch glimpse  
of bird. Definitely ♂ Albi. Uttering lots of R's with no trace of Intro Notes.  
In thin "screen" alpine scrub between cut over area and precipice 6-12  
ft above ground. I don't think that I have ever seen either Cyp or Scans in this  
precise area

6:38. See single Yellow-belly alone. 6 ft up in alpine scrub



Albi

Then hear another Albi uttering R's. It is my impression that the Albi up here are uttering R's more frequently now than last week. Response to a spell of good weather?

Albi  
Cys

6:45 am Hear Albi R's fairly low in scrub only about 50-100 ft from where Cy heard and seen singing a few days ago. NOTE. In case my preceding descriptions and comments are not clear. Of course, Cys pass over Albi territories when they are in mixed flocks. But it also does appear, definitely, that the Cy territories (as distinguished from their ranges with mixed flocks) may also "over-lie" Albi territories. At least partially.

See single footy through alone.

Albi  
Cys

Of course, I am using the term "territories", of Cys and Albi, in a very "presumptive" sense. I have not actually seen any territorial defense. I am using it to include the areas in which individuals habitually remain, at least as long as they do not associate with mixed flocks.

Albi

Well! Well! Well! 6:58. There is a ~~♂~~ Albi here, in alpine scrub, who has been hanging around the neighborhood for some time. 4-15 ft up. Definitely alone. Uttering quite a lot of R's from time to time. No Intro-Note(s). Then suddenly I look up, to see a Coer (I am almost completely certain of the identity of this bird - I saw the *Diglossopus typi* bell - and the bird was almost certainly too light and dull a blue to be juv. Cy) in a small tree, only about 10 ft from where the ♂ Albi was at the time! Silent. Picking insects off leaves. The two birds seem to pay absolutely no attention to one another.

Coer  
90

♂ Albi continues activities as before. Continues to utter R's, but no more or less frequently than before. Coer remains pretty consistently 8-10 ft above ground. Then flies off. ♂ Albi pays no attention. Feeds on tubular red flowers (so the Albi here are not purely non-nectivores either). Then more



around a little more. Paves thru, and past, tree where Coer fed by a minute  
or so earlier!

As the Coer territory, here must overlap both Cy and Albi territories  
(even if the Cy and Albi territories do not overlap one another)

Incidentally, in this alpine scrub, which is rather low, the Albi and  
d Blue Kinglets must often approach the same level above ground. Probably,  
in fact, overlap. The situation here must be rather different from that in the  
tall sub-tropical forest just below.

NOTE: The Cy-like song with Coer-type Intro-Notes heard near here  
a few days ago must have been uttered by this Coer.

Everything quiet here 7:25 a.m.

See another single fairly through alone.

Heard what may be seen vocalizing not far from Cy-Coer area, but  
not within, to my knowledge, within it.

7:35. See rather large hummingbird feeding tubular red flowers in  
meadows on which Albi fed earlier. But this hummingbird definitely not  
seen (has white sides to tail)

NOTE: I don't think my description above was very clear in one res-  
pect. The Coer, when it flew away, went straight to the area where I have  
seen Cy(s) on previous days.

Leaving 7:45 a.m.

On my way down hill, I saw a large mixed flock in low  
scrub under trees near upper limit upper sub-tropical forest. Included  
2 Yellow-bellies, 1 or 2 PR Atlapetes, and many others. The Yellow-bell  
ies definitely in lead.

The PR's seem to be almost (or completely) obligate commensals here!



May 26, 1965  
Farallones

Going up to a camp of the CVC called "Koria". On path at 8250 ft. see mixed flock 2:30 p.m. Area tall temperate (i.e. sub-tropical-looking) forest. Types rather widely spaced. Lots of epiphytes. Main fruit seen group includes 2 ♂ Western Tanagers, 2 Comptosoma (usual species), at least two species of Myiarchus-dendrocolaptes, 1 Whitestart (probably Ha-te-throat). Possibly others. Flock as a whole (and probably all species within it) ranging 25-60 ft up in trees. All noisy. Whitestart flycatching Myiarchus-dendrocolaptes running up tree trunks. Westerns apparently getting insects off leaves (not flycatching). Westerns certainly not in lead. Most of the birds go uphill, quite gradually. Westerns follow repeatedly for some minutes — then apparently stop following. Rest of the birds disappear from my view, but Westerns certainly remain behind. Rather surprising, the 2 ♂ Westerns associate closely with one another (repeatedly following one another) without any sign of overt, hostile movements or postures. On this respect, the Westerns seemed very different from the Summer Tanagers I remember.)

There is intermittent fog throughout the period this flock is in view. Gets worse after Comptosoma-Myiarchus, etc., disappear. Then, about 20 minutes later, I can hear that there are more birds of other species not far from the Westerns. I can't see well enough to determine if there are the Comptosoma-Myiarchus birds returning, or a new group appearing. Then I have to leave

3:30 p.m. Reach Koria camp 8350 ft - 2550 m. Fog has li



3. 3. 3. See single OT alone. Flying from tree-top to tree-top edge of clear-  
ing 40-50 ft up. Silent

4.27. See single Blue Toucanet alone. Perched exposed 40 ft up de-  
ad tree. Different species from Purace 'area. All black bell. White throat.

There are lots of small birds flying thru tree tops from time to time.  
None of which can I identify! Presumably Tangaras and flycatchers

See a single Sooty Thrush alone in tree, 30 ft up.

13  
14 Some of these small birds in tree tops probably are members of (a) diffuse  
flocks. See 2 Xanthocephala, 1 Sooty Thrush, 1 tiny flycatcher or oriole, 1  
larger flycatcher (like all gray Pewee) only 10-15 ft apart single tree. Xantho-  
cephala supplants → small flycatcher or oriole. Then the Xanthocephala  
s move on. The other birds do not follow immediately.

4.40. See what is probably same pair Xanthocephalas in another tree.  
30 ft up. Now apparently alone. Looking for insects on branches. A few minutes  
later, in nearby tree, see single Cyanoccephala. I can't tell if it was attracted to  
the Xanthocephala or not.

4.49. See single Ruddy Flycatcher 20 ft up, scrub edge forest. Then  
a single Cyanoccephala flies out of nearby bush into tall tree.

I still think that this is probably all part of a very diffuse mixed flo-  
ck. But the presumed members of the flock often are hundreds of feet (or yards)  
apart!!!

Fog coming in again 5:00 p.m.

10  
16 5:15 Another area edge Korea station clearing. Patch of second gro-  
wth, not covered by trees. See 2 Slate-throated Mistletoes (definite) in scrub  
6, 5-15 ft up. uttering "Tut" Notes. They move on to adjacent tree. A  
second later, 2 Cyanoccephala appear in same scrub where Slate-throats ha



no 2 seen. Moving in same direction as slate-throats. Then, suddenly, 2 Cys (defuncts) fly into tree only 10 ft from one into which slate-throats flew (I think the slate-throats are still there) 15 ft up. Cys fight with one another. Fight apparently silent. Then one or both fly (ies) off.

Doubtly slate-throats are allegorical here (too) ??? Possibly (also) passive nuclear ???

Incidentally, some species has been singing here very frequently ever since we arrived. I have yet to see the birds uttering their songs. But the songs sound rather as I remember slate-throat songs in Chiriqui. I think slate-throats may be very abundant here.

5:30. See single Quetzal alone. 30 ft up in tree. Apparently juv. ♂ molting into adult plumage or an adult ♀

See single slate-throat singing. Short phrase. But this is the type of song which I thought might be uttered by slate-throats.

There also is something around here which is uttering twittering songs which are much more Dylannic-like than slate-throat song. I think there may be Cys. In any case, these songs are being uttered while slate-throats are silent.

One bird is uttering these twittering songs with 3 or 4 "Tut" in two notes before each phrase. This must be Cy. If so, the main, twittering part of each phrase is relatively long and rapid, including relatively many notes.

5:40 pm. See bird fly away from tree from which Cy-type songs have been coming. It is Cy. And songs stop as soon as bird flies.

Everything getting dark 5:47. Also quiet. Going to stop observations.



May 27, 1965  
Savannah

Going to work around Kona station again this morning. Starting 5:15 a.m. Still quite dark. Everything quiet.

First diurnal bird sounds (unidentifiable) 5:28 a.m.

6:10. There is a single bird in tree tops here. Quite alone. Looks like some sort of Cotinga. Blackish cap. Orange-ish throat. Apparently pale greenish or greenish yellow below, streaked with dark. Rather sluggish. Silent. Goes from tree to tree 30-40 ft up.

6:20. See Quetzal alone. Apparently same individual as yesterday.

6:30. Go for walk thru adjacent forest. Almost immediately come across mixed flock. In tree tops. Difficult to see; but group certainly includes Chlorospingus canicularis, 2 Plate-throats, 1 Cy, one large-ish tanager with bright yellow underneath (almost certainly usual Comptosoma), and a variety of vireos, tree creepers, and flycatchers. Birds ranging 25-50 ft up.

Now Cy utters several long phrases. Plate-throat at least one. Not overlapping. Plate-throat f —————> group canicularis f —————> group. All birds apparently looking for insects. Group sometimes coherent, for sometimes rather scattered, with individuals up to 100 ft apart.

Sun shining brilliantly 6:55 a.m.

Reach edge another pasture. See single Sooty Thrush alone. Small tree edge forest 10 ft up. Then see single Yellow-faced Whitestart alone. Another small tree edge 15 ft up.

7:15. Come across what may be rather diffuse flock scattered mainly in trees and scrub edge pasture. 2 Xanthocephala, 1 Cy, 2 Ruddy Flycatchers,



39

1 unidentified N. American warbler in dull plumage. All moving Cy flocks. Ruddy  
ies utter R's. Ruddy & warblers 15-30 ft up. Cy and xanthocephala 30-40 ft  
up. Cy flies in one direction. Nothing follows immediately. xanthocephala fly  
off in different direction. Nothing follows immediately.

17:30-17:50. Watching mixed flock. A little further along edge pasture

44 40  
44 40  
When first seen, birds are in trees and scrub about 10 ft, just inside forest. At  
this time, group certainly includes 1 Atlapetes rufinucha, several tree creepers,  
1 adult Andean sparrow and 1 juv. same species, 2 Yellow faced Whitestarts  
and 2 slate-throats. Possibly also 1 Cy. rufinucha ranging 10-15 ft up.

Tree-creepers about the same. Andean Sparrows 1-5 ft up. Slate-throats 10-  
20 ft up. Yellowfaces 20-40 ft up. I.E. the two Whitestart species are quite  
well segregated. Birds fairly noisy. Yellowfaces utter a few songs.

50  
Then at least some of the birds, i.e. the Yellowfaces, fly out into  
scattered mature trees in pasture. They see that in adjacent trees there also  
are at least 1 Sooty Thrush, 1 Compsozona (usual species), and 1 cyano  
cephala. All ranging 20-50 ft up. cyanocephala definitely eating berries.

Group does not seem to be making definite progress in any given dir-  
ection. And all species sometimes (not always) very scattered. Difficult to  
determine who, if anyone, is in lead. At different times, the rufinucha, the  
Compsozona, the slate-throats, and the Yellowfaces, all have appeared to be  
in the lead.

This area is approximately 2575 m.

44 40  
While I am writing this down, a number of (other) birds (re)ap-  
pear in exact same area where rufinucha group seen earlier. Certainly including  
1 Cy. Cy flocks. No other diglossini or Whitestart audible at the time. The Cy  
is approximately 10 ft up. Then these birds disappear from my sight. Less than a



*Albi* 10 minutes later, I see 1 ♀ *Albi* (definite) in bushes less than 10 ft from where *Cy* was seen, same elevation above ground. Uttering "CN"s.

*Cy* 10:00 So *Cy* and *Albi* ranges must at least be adjacent, in some places at some times.

Actually, I am not sure that all the birds I have seen since leaving the Kona clearing are not members of the same, very diffuse, group !!!

*Cy* 8:10. Same area. *Cy* singing in tree-top. No other diglossini or other bird not audible at the time. Then shuts up. Everything quiet this area. The red flock seems to have gone on.

Sun has gone. Cloud coming up. I will move on a little.

*Cy* See group 3 *Booby* Thrushes apparently alone. In scattered trees in part we. They "mob" me. Then fly off into adjacent forest. There certainly are some other birds in this part of forest. I can't see them. But *Cy* certainly among them. Utters typical *Cy* songs. Then shuts up.

Starting down hill again.

*Cy* 8:45 Come across flock edge clearing. This is opposite edge of clearing from where flock seen earlier. But it may be (largely) same flock. Lots of small birds top tall trees. Including *Cy* which sings briefly. Also 1 *Coniropsoma* (usual species) 25 ft up in trees. Then group disappears (again).

A few minutes later, see single *Xanthocephala* same area. 50-60 ft up. Quiet. Looking for insects. Apparently alone.

A few minutes later see Squirrel same area. 10 ft up on tree trunk. Looks like "usual" species seen before.

NOTE. As far as I can recall, all the squirrels seen in Aodes, with or without mixed flocks have been quiet. Probably silent, in fact. They certainly never seem to contribute to the "general attractiveness" of mixed flocks.



by adding greatly to their conspicuousness.

8.57. A little further on. There seems to be a lot of birds around here. But none close together. See single Cy singing 25 ft up tree edge forest. There certainly is no other bird close to Cy at the time. Uttering long rapid Twitterers with little or nothing in way of Intro Notes. (I think these are the type of phrases which I thought might be Cer. like earlier this morning.) Then flies off. Back uttering more songs, with Intro Notes.

Fog approaching 9:05 a.m.

13 Cy singing in isolated tree in pasture. Then see another Cy feed in same tree edge forest 50 ft away. 20 ft up. Apparently looking for insects. Silent. Definitely alone. Then this Cy flies across corner of pasture into another part of forest. Passes right over Yellow-face, 15 ft up in tangle beside another tree edge pasture. No apparent reaction between the 2 birds. A minute later, singing Cy shuts up. Flies over and joins ———→ Yellow-face. Then both disappear from sight. A minute later, hear both Cy songs and Ruddy Flycatcher in R's same area.

Stopping observation 9:30 a.m.

COMMENT. It is my general impression that mixed flocks probably are common here, but, if so, they certainly are very diffuse on the average. Much more diffuse even than the flocks on the Pico de Espejo in the Sierra de Merida last month.

There doesn't seem to be anything very panure nuclear here now. Not even the xanthocephalus.

9:50. Back Kona Station. Group of at least 3 Cauques 20-30 ft up in small trees edge clearing. Black with clear (rather lemon) yellow rumps and lower backs, and patches on wings (scapulars?). Light, whi



tree, lulls. Also light eyes. Very noisy and conspicuous. But nothing joins them. (Big black and yellow birds do seem to be "repellent")

10:43 Another edge Kona clearing. See pair Kate-throats. One low in brush, 2-5 ft above ground. 1 in tree edge forest, 3-20 ft up. One utters a couple of long phrases. Apparently alone. (Although unusual) I can hear other birds in trees not very far away.

12:30 pm While eating lunch, I see that there is a single Cy singing 20-35 ft up in scattered trees in clearing. Songs as usual. Also 1 pair Naethia cephalis; and 1 adult hemer. All birds fly from tree to tree at irregular intervals. Sometimes 2 species will be in trees only 15-25 ft apart from one another. But it is quite obvious that no species is paying attention to any other. Absolutely no tendency to follow or join one another.

See single Sooty Thrush alone. 1 ft up second growth scrub.

I shouldn't be at all surprised if the mixed flocks here were in part due to "disolution" because the breeding season for a lot of species has begun or is just about to begin!

NOTE: According to the VC man who is cooking for me — and who seems to be thoroughly familiar with this area — the Sooty Thrushes here congregate into large bands (apparently of their own species alone) at the height of the rainy season (April-May). This would seem to confirm some of my earlier observations elsewhere.

1:45 pm. See ♂ Turdus serranus 30 ft up in tree edge clearing. Then Sooty Thrush supplants serranus! Also hear lots small birds in adjacent tall trees. Catch a few glimpses of them. Groups certainly include some small woodcreepers (Probably same species as in Central Cordillera — light throat and supercilious). Also, apparently, Red Woodpecker!



2:08 pm. Going uphill in forest. 8300 ft. Flush a large  $\checkmark$  trogon and at least 2 other birds from same clump trees. At least 1 of the other birds is Basileuterus XXXX (as in Sierra de Huixtla). Basileuterus and trogon go in different directions. All 10-20 ft up. Silent.

2:35 pm. 8700 ft. See single Yellow face. In second growth scrub, under trees, along stream and path. 5-15 ft up. Silent. Alone except for a single hummingbird (not seen) flitting about in neighborhood. The two species are paying no attention to one another.

2:55 9050 ft. Region low second growth with scattered large trees. See single lost Thrush alone 5 ft up in scrub.

Tag coming in now.

3:00 pm. Same area. See large mixed flock, small birds in trees. Group includes at least 2 Yellow faces, 1 Cyanocapala, 1 Cnemidophorus, 1 Ruddy Gnatcatcher, some woodpeckers, others. Also lots of hummingbirds flitting about. Including Ensifera! Yellow faces ranging 15-60 ft up. Ensifera seen only low, 10-20 ft up. All other birds fairly high, 30-60 ft up. Yellow faces fly catching. Also Ruddy. Cnemidophorus eating green fruit. Group as a whole quiet. But both Cy and Cyanocapala sing occasionally. Not overlapping.

Group as a whole quite coherent. But not making very rapid progress. All birds doing a lot of flitting back and forth. Once, Cyanocapala seemed to be in lead. Once, the Whitethroats.

Group stays together for 15 minutes. After about 10 minutes, group of Caniques (same species seen below — XXXXXIII) flies into trees about 200-300 yards away. Make a lot of noise. Perhaps disturbed by me. Then group of Caniques joins  $\rightarrow$  group other birds. The latter do not react in any conspicuous way. Caniques fly away again. Then Caniques  $\rightarrow$



group of other birds again. This time, the other birds seem to "disappear". They certainly leave, but I can't see where or how. Presumably repelled by *Caligues* ???

*Caligues* stay around for some minutes. Then start to move off. As they go, I see a pair of *Whitestrupes* (definite) 6 ft up in thick second growth scrub, more or less under trees in which *Caligues* and other birds had been earlier. Quite possible they had been there all the time!

Reach area 2850 m., 9375 ft 3:45 pm. Fog has lifted. But I seem to have lost the path! Forest here obviously still temperate. No trace alpine scrub. Best trees rather far apart.

3:55. See single *Yellowbelly* in tree uphill. Probably 30 ft above ground sitting quietly and preening. Only 1-2 ft away from the *Yellowbelly* is a single *Diglossa*. Light is bad, so I can't be absolutely sure of species, but it probably is *Cy*. Also sitting quietly preening. *Diglossa* flies away. A minute later, *Yellowbelly* does too.

Starting downhill again 4:03

4:20 pm 9125 ft. Not far from where large mixed flock seen earlier. Probably large same flock. Region second growth scrub and a few trees. Just see 2 *Yellow-faces* in scrub, 10 ft up. 2 *Whitestrupes* f. *Yellow-faces*, at same level. Then a whole group of birds appears. Definite following *Yellow-face* - *Whitestrype* group. But 20 ft behind. In small trees 15-30 ft up. This is "main party". Includes 1 *Cy*, 1 ♂ *WCC* and 1 ♀ *WCC*, at least 3 *Microscopus*, 1 *Empidonax*. At least 1 *H. atripileus* & group. Stays in scrub 3-6 ft up. Not bamboo, (there is no bamboo around here). Birds only moderately noisy. No song. *WCC*'s picking insects off leaves. Other species apparently looking for insects in a number of



Emberiza  
will  
cy

different ways. Once Emberiza supplants  $\rightarrow$   $\rightarrow$  WCC. Once, WCC's  
J  $\rightarrow$  Cy Tavie, WCC's  $\rightarrow$  Cy !!! It looks as if WCC's here  
may be commensal on Cy !!!

93

Then whole group goes 30-35 ft up on other tree. Gradually lost from  
sight. Just as it is about to disappear completely, I see that there is a large tree  
creeper following 20 ft behind. Definitely bringing up the rear.

94

ADDITION: There also was Cyanocypselus with "main party".  
Flock as a whole was very coherent. Birds not far apart. And making  
definite, steady progress in one direction. Uphill. Presumably going to roost.

cy 96  
200  
110

Reach upper edge Koro station clearing, 8500 ft., 5:15 a.m. See 1 Cy  
flying 33 ft up in tree in pasture near forest. Yellow-faced Whitestarts and  
some warbler(s) or vireo(s) in nearby trees. Then all fly off, definitely in a  
group, into another tree 50 ft away.

Mixed flocks seem to be becoming more coherent now! Reversal to non-  
breeding condition in evenings???

See a pair of Sooty Thrushes alone 5:21.

Get back to house 5:40 p.m.

May 28, 1965  
Jarallene

Going uphill same place as yesterday afternoon. Delayed start-  
ing because of rain. Rain finally stops, but clouds remain very thick and light  
is atrocious.

On way up hill, ca. 6:15 - 6:25, see a number of dark birds in scrub



1. Apparently alone. Apparently large, leafy shrubs.

Beach approximate area where big flocks (WCC etc.) and Coughs seen yesterday 6:40 am. Everything rather quiet now. But there were a lot of all sorts of bird sounds just below this area a few minutes ago. Including Yellow-faces and Wrens.

6:45. Now hear Yellowface singing a few phrases up here. No other W. hettant or D. genuine audible at the time

6:50. Just as light rain starts. Region fairly thick and high second growth where mixed flock seen second time yesterday. Single Whitestripe appears 2 ft up in scrub. Definitely alone. Discovers me. Starts to give lots of single SHN's. Very loud and hard. This immediately attracts hummingbirds. First species to arrive is moderately small, with a medium short straight bill. No I. Bronzy greenish above. Buff below. Dark cap (either brown or bronzy green). Prominent white streak behind eye, extending downward and backward. Prominent dark patch (streak) on cheek, also extending downward and backward. This dark patch or streak probably is dark brown. Tail fairly long. Slightly rounded. All or most tail feathers with terminal buff patches. Then a single ♀ Albi is attracted to group. This individual lands about 1 ft from Whitestripe. Quite silent. A hummingbird I makes repeated "unlubricated" attacks on the ♀ Albi! Albi just moves away each time. (Most of the attacks are short forward and backward. Not sweeps.) Then some more hummingbirds appear. 1 or 2 more I's. Also 1 or 2 individuals of another species. Larger than I, with a longer straight bill. I shall call this XI. Largely dark metallic green. With very conspicuous white chin and throat. Also very conspicuous white sides to tail. One XI sweeps at ♀ Albi! Then ♀ Albi disappears. Whitestripe and hummingbirds remain. Within a couple of seconds, a Ag appears in



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bush near Whitetripe. Also silent. Stays around for a couple of minutes. Then flies off into adjacent tree and disappears. During all the time the Cy was around, the hummingbirds appeared to ignore it! Possibly Cys are too large to be very attractive as objects for attack ??? But after the Cy left, the various hummingbirds began to fight among themselves. Probably both inter- and intra-specific nips and chases, and I think that some or all of the hummingbirds also made inhibited attacks on the Whitetripe (which is larger than the Cy) during the general commotion.

Whitetripe eventually moves off; but hummingbirds remain. Still disputing. Quite noisy.

Incidentally, this Whitetripe may have been juvenile. Its supercilious stripe was yellowish. (But I am sure of my identification. Bird quite different, in shape, from Baukatenus.)

23 Hummingbirds stay around for some minutes. Then a Myiophobus appears, briefly, 5 ft up in bush 20 ft away. Apparently attracted by hummingbird sounds. Utters several R's. Louder and probably harder than all or most Alb R's. Then disappears. (This bird probably also juv. Orange cap incomplete.)

At which point, 7:12, rain begins to come down in buckets and I have to suspend observations. Walk on down road a little.

all 24 7:20. See another Alb, 4 ft up in scrub below trees. Definitely not same individual seen before (too far away). Silent. Disappears.

all 7:25 Alb may be common here! (Incidentally, I have seen more red, pink and orange flowers around here than anywhere else in the farallones.) It is interesting that they did not join mixed flocks yesterday. Albs do seem to be less allo-gregarious than Cys - at least in Central and Western Cordilleras.

63 When I first arrived here this morning, I heard a number of R's at



various sites. But I think that they were all attracted by such species as Ruddy  
Flycatchers, Thlypterus etc. Others do not seem to be "in voice" here now.  
Presumably not breeding.

During the first 15 or 20 minutes of heavy rain, I heard a number  
of Cy and Yellow-face songs. Not overlapping. Then birds fell silent as rain  
continued.

Rain stopped 7:50 a.m. Resuming observations 8:15 a.m.

NOTE: As far as I could tell, there was no tendency to form mixed flocks  
during this rainy spell. But I was not able to see much. There was an out-  
burst of bird sounds after the rain! Including lots of R's. Thlypterus??

8:25 a.m. Things in general are quiet. Still very cloudy. Some fog  
approaching. It is possible that many birds have been "ruled out" of the area  
with a mixed flock which I missed.

Going further uphill. Along a different path from the one follow-  
ed yesterday.

8:45 a.m. 2800 m. Region of heavy forest. Not very high. With  
lots of scrub-bulge trees. See another mixed flock. Group includes 2 Yellow  
faces, at least 1 Pf. Pittapites, at least 1 Bambantenus EXXX, at least 1  
Litti, several tree creepers (species seen before - light throat and supercilious),  
a pair of flycatchers (species not seen before), and at least 1 H. atropileus.  
The H. atropileus is in lead at least part of the time. All birds hanging 15-30  
ft above ground. Notting in tree-tops. Birds moderately noisy, but no song.

Although I know that there is some bamboo not far from here, there  
was none in the precise area where the flock was moving. As far as I could tell,  
this did not bother the atro-pileus. I.E. the atro-pileus here seem to be less  
bamboo-loving than in some other parts of the Andes.



Then a really terrific downpour of rain begins! Really torrential, so I decide to go on further uphill. Rain over 2875 m. when rain lets up a little. Everything very quiet during both rain and subsequent let up.

Then another terrific downpour begins. So I start downhill. Rain continues without let up. But, this time, all the way down hill through the forest I hear lots and lots of birds. It seems as if every single bird in the whole region is vocalizing!!! At least between 10:00 a.m. and 10:30 (when I get to the bottom of the forest) I also catch glimpses of at least 3 mixed flocks.

So it looks as if the birds here are like the ones on Munchique. Bad weather seems to stimulate the formation of flocks here!!! (Of nothing else, the onset of vocalization during at least some heavy rains will tend to bring birds together.) As noted yesterday, it is quite probable that many of the birds at lower elevations, down by the Keren Station itself are coming into breeding condition. But the rarity (or "diffuseness") of flocks seen yesterday may have been largely due to the fact that the weather was good yesterday, without rain and with long periods of sunshine. Certainly, all the flocks seen today were very coherent. Birds keeping close together and moving steadily in one direction. (And, incidentally, without any overt hostility between members.)

The 3 flocks seen on the way downhill were as follows:

The 3 flocks seen on the way downhill were as follows:

1. Just about 25 m. below the highest point reached. A group of 3 GT's, 1 very large tree creeper, others. In large but not very high tree. All birds seen 20-30 ft up. GT's "mob" me with loud, harsh, nasal notes.

II Where Allos seen earlier this morning. Definitely at least 4 or 5 birds moving about in scrub. But rain too heavy and light too bad for me to be able to identify any of them.

III. Lower part of the forest. Close to the highest part of the Korea Sta



1440 from pastures. Very large group (approximately 20 birds I should think) in dense and rather high second growth in ravine along stream. Group includes some Baileuterus and/or Thraupis types, 2 Yellowfaces, some wood creepers, probably others. All ranging 2-10 ft above ground.

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GENERAL COMMENT: All in all, the birds of this part of the Andes seem very similar to those of Munchique. I.E. the whole of the southern part of the Western Cordillera may be essentially "uniform" (at similar altitudes). This is nice to know. It means that I probably am safe in "extrapolating" from observations in one area to conditions throughout whole regions.

1:00 p.m. Kora Station. Cloudy but no rain or fog. See single Ruddy Flycatcher 4 ft up in scrub. Silent and definitely alone.

Then fog comes in! Really very difficult to work today.

Going to see if anything can be done this afternoon.

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any given direction. Difficult to tell who is leading. Probably Synallaxis and Yellow-faces at different times. Bauleuterus ~~XXXX~~  $\rightarrow$  Yellow-faces.

There is 1 big fight among Whitetails with flock. 2 Yellow-faces chasing and attacking something. I can't tell if the pursued individual is another (third) Yellow-face or a Slatethroat.

152 Other Group gradually moves up hill. Then a single  $\checkmark$  Alb appears toward rear of group. Hops thru scrub 4-12 ft up. By this time, I have lost sight of the Gy. Certainly the Alb does not come anywhere close to the Gy.

23 When group goes uphill, the Synallaxis and Bauleuterus probably stay together. But I am not sure how many of the other birds follow them. Certainly the Comprocoena does not. After the other birds disappear, I see the Comprocoena still around, gathering n.m. industriously. It includes moss and small twigs. So this is another species breeding here now!

Go along forest path a few hundred yards. See single footy Thrush and tinamous together on ground. Only a couple of feet apart. Fly off together in same direction!!!

157 Other 3:10 pm  $\checkmark$  8700 ft Forest in ravine along stream, see another mixed flock. Includes 2 Yellow-faces, at least 1 Sette, and a couple of small warbler-like birds which probably are a pair of WCC's. All 15-20 ft up in trees. Quiet. Apparently all looking for insects. Yellow-face supplants  $\rightarrow$  one of the warbler-like birds, probably the  $\checkmark$  WCC.

110 Other 3:22 Just a little bit further on. See pair H. atropideus 3 ft up in scrub by stream. Alternating SHN's. 1 footy Thrush  $\rightarrow$  atropide us. Then atropideus fly off. Thrush does not follow.

31 3:35 pm. 8700 ft. See group 4 Synallaxis low in scrub along edge.



c of patti. 2-4 ft up. Now. Probably same species seen earlier. Probably same individuals, in fact. But now, apparently alone.

Have reached fog level now

Up where first 2 Albes seen this morning 3:45.

Fog lifts 3:58 p.m. Can hear various birds in neighborhood. Do not sound like a flock.

See single Sooty Thrush alone. 3 ft up in scrub

Birds in general certainly very much quieter this afternoon than during last rain this morning!

4:25 p.m. 9300 ft 2850 m. See single Yellowbill, alone 25-35 ft up in tree in dense forest. Bird flies off. Apparently to join mate slightly downhill

Fog approaching again. Everything very quiet now.

4:34. Same area. See pair Atlapetes torquatus. On ground. In area palm scrub under trees. Silent. Definitely alone

Then a few seconds later see pair of birds in tree where Yellowbill was earlier. Apparently cotungas. Reminiscent of Piprida rufus but differ from any of the latter I have seen before. Dark bill. Red eyes and legs. Dark head and breast (dark blue? black?) Olive above. Yellowish spots on wings Yellow below on belly and abdomen (probably also lower breast). Yellow prominently barred (not streaked) with blackish

Then the 2 Cotungas fly approximately 100 ft away. I follow them and find that they have joined large mixed flock. Group also includes 2 GT's, 2 Yellowbellies, 2 Yellow-faced Whitestarts, at least 1 H. atrorubens, at least 1 Whitestripe, at least 1 Baileuterus LXXXI. Group as a whole quiet. Cotungas, GT's, Yellowbellies, and Yellowfaces stay in trees, 15-30 ft up. Homospingus spp. and Baileuterus in scrub. 5-15 ft up. Difficult to

LXXXIV See Corrected Description!

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tell who is leading. Probably GT's, at least most of them

II 141 A single Hummingbird II joined  $\longrightarrow$  this group. Hovered and flew about the outskirts of the group for at least 2 or 3 minutes. Then disappeared (before the group as a whole had moved off). It looks as if II may be definitely allo-gregarious!!! Or, at least, fond of "exorting" in the same way as *Drylosia* spp.

Going down hill 5:03 pm

35 5:20 pm. Down where Cy-WCC flock seen yesterday. See single All-rufous *Synallaxis* (identification definite) in low scrub. 1 ft up. Apparently alone! Silent.

II 149 5:30. Between 8700-9000 ft. Little glumpse very mixed flock in trees. Also in fog. All birds apparently seen hanging at 40 ft above ground. Group includes at least 1 PL *Atlapetes*, at least 1 *Cnemidophorus*, 2 *Yellowfaced*, 1 *Sooty Warbler*. There also is a Cy *Pengue*, nearby. Then 6-7 *Caciques* and 2 *Blue & Blacks*  $\longrightarrow$  group! *Caciques* & *Blue & Blacks* definitely together as they arrive. *Caciques* stay with group. Don't seem to bother the other birds at all. *Hummingbird* II also  $\longrightarrow$  group separately. Stay on outskirts.

II 154 Now in that group also includes tree creepers and flycatchers (both unidentified).

154 ADDITION: The GT-Yellow-bellied flock seen this afternoon also included at least 1 White-bearded Flycatcher. Quiet. In trees, at approximately same level as GT's, Yellowbellies, catangas, etc.

#### REMARKS:

I. The Sooty Warbler seems to be approximately as gregarious here as in Managua.



II The forest around 9300 ft here is not quite the same as the forest 200-400 ft below. Trees are shorter, and more widely spaced. It is far from being "Alpine scrub" - but it is on the way to getting there!

May 27, 1965  
Jarallones

Delayed by rain in usual way this morning. Entering forest path going uphill 6:05 a.m.

The sun is shining now, and everything is very quiet. All I see on the front part of the forest trail is a few (3 or 4) single sooty Thrushes.

Reach approximate area Albin and Cy-WCC flock 6:45 a.m. Everything quiet except for occasional Cy and Yellowface songs, some R's, and a variety of hummingbird noises. Hummingbirds are fighting among themselves.

37 6:57 See 2 Yellowfaces. Silent and definitely alone. In low scrub, 2-3 ft up, along edge of path.

7:25. See single Atlapetes brunnei-nucha (definite) 3 ft up in low, thick second growth scrub. Silent and alone. Very near where Cy-WCC flock was a few days ago.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

37 7:44 See pair Ruddy Flycatchers in trees. Apparently alone.

They are squirrel, brown with red tail, 35 ft up in tree. Making a lot of noise. Chattering. Two sooty Thrushes of ———→ squirrel. Then fly off in one direction, while squirrel moves in another.

Starting downhill 7:55 a.m.

41 On way down 2675 m. See pair Agornis-types (same species as on



Guirapica) silent & alone in forest by stream 30 ft up in small tree

8:30 a.m. Just below forest Edge upper Korea station. See mixed

flock is moderately high and dense scrub along stream. Not far from where mixed flock with "All-rufous" *Synallaxis* seen yesterday. Probably partly same flock. Group now include: at least 1 *Chlorospingus canigularis*, at least 1 Blue Black, 1 *Comp. noma* (presumably the nest building bird), 1 WCC, at least 1 *Slater's*, a pair of Yellowfaces, 2 Ruddy Flycatchers, 2 *Sooty Thrushes*, and several species of Tanagerid - *Dendroscaptis* (but definitely no *Synallaxis*). Group as a whole noisy. No definite consistent leadership. All or most species ranging 5-20 ft above ground. *Thrushes* and *Comp. noma* usually relatively high. *Chlorospingus*, Blue Black, and WCC usually medium. Yellowfaces ranging high to low. Frequently down low, 5 ft up, in the "stratum" which is "typically" *Slater's* throat. But, when they were down this low, the *Slater's* was nowhere near them. I.E. the 2 species of *Whitethroats* here may have a typical "mutual avoidance - inhibition" relationship of a "diglossine type" !!!

REMARKS:

I. The "habitat requirements" of *Atlapetes* spp. at higher elevations seem to "coincide" with those of *Diglossa* spp. Neither is very abundant in very dense and very high (i.e. very humid) forest.

Most of the brightly colored allo-pregarious tanagers also seem to be somewhat rare in such environments.

All 3 groups differ from the "typical bush-tanagers", e.g. such forms as *Heuripicus* and *Basileuterus*, (generally olive, yellow, brown, black, etc.), which do seem to be relatively abundant in thick, high, humid vegetation.



II. The areas ca. 8300-9300 ft where I worked on the Tancitaras probably are more humid, on the average, than all or most of the areas of comparable elevation where I worked on Munchique. Brightly colored allopatric species seem to be more abundant in the latter areas than in the former.

III. If there is any difference between the birds of Munchique and those of the Tancitaras in degree of allopatricity (which I very much doubt), the birds of the former are more brightly colored than those of the latter.



TOTAL =

WWS

July 22, 1983  
Valley Rio Hondo

On slopes leading up to Paramo Frío at 8900 ft. Secondary with scrub between mature ("tall upper" sub-tropical" type) and pasture. Starting observations 11:00 a.m. Clear and windy.

See 3 Yellow-faced Whitestarts. Engaged in obviously hostile chase. Very noisy. 2-6 ft up in scrub. Apparently alone.

There are 2 Ruddy Flycatchers 15 ft up in adjacent small tree. But I don't think that they really are associating with the Whitestarts.

CORRECTION: There is a mixed flock in adjacent forest edge. Includes at least 2 *Geothlypis*, several tree-creepers, others. Probably also at least 2 blackish diploenas, which I am not able to identify. The Whitestarts and Ruddy Flycatchers seem to be keeping in the neighborhood of this flock - sort of flitting around the outskirts. Flock as a whole is quite diffuse, but appears to be a "real" social group, not a "casual" aggregation.

Leaving 11:30 a.m.

Starting out again after lunch. Going up hill.

1:05 p.m. 9150 ft. See single sooty Thrush alone. Silent. Flying across pasture into neighboring forest.

1:20 p.m. 9300 ft. See single Horn Woodpecker, alone. Flying from dead tree to dead tree in pasture.

Then see single sooty Thrush alone. 2 ft up in scrub edge pasture. Silent.

1:30 p.m. 9400 ft. See Brown and Ruddy Flycatcher. SEE

TODAY'S NOTES ON MIXED DIGLOSSINI. A few minutes later, see 11:30



(44)

possibly single White-bearded Flycatcher in same tree where Brown and Ruddy seen earlier. 10 ft up.

A few minutes later, we single Sooty Thrush alone in adjacent tree 15 ft up.

As far as I can tell, these birds are not members of the same social group.

CORRECTION: They probably are part of a mixed flock. A few seconds later, and a few feet further on, we single PL Attagates, one B. nigrocrinitatus in bush. Also: Ruddy Flycatcher. Ruddy, almost certainly same individual seen earlier. And I imagine that the Brown and Whitebeard seen earlier probably were attracted to this group at least temporarily. PL ranging 10-15 ft up in bushes. Apparently feeding on clusters small yellowish white flowers (eating them whole). B. nigrocrinitatus ranging 2-15 ft up. Possibly also feeding on same flowers and picking insects off leaves. Ruddy making flycatching flights, 6-13 ft up. All individuals quiet. PL probably in lead. B. nigrocrinitatus definitely f —————>

The PL, nigrocrinitatus, & Ruddy eventually disappear from my sight. A second later, a hummingbird XII appears in bush where group was earlier. Feeds on yellowish white flowers in usual hummingbird fashion (sucking nectar). Then flies off. Another second later, Scan (definite) appears! The hummingbird XII disappears just before or just as Scan flies in. Scan perches a second. Then flies off. (P.E. it did not feed on the yellowish white flowers).

A few seconds after Scan disappears, Brown (re) appears in tree 15 ft away. 8 ft up. Utters several long phrases. All Twitter's, but very rapid, mechanical, "un-musical". Almost R's. As



As far as I can tell, the mixed flock is some distance away by the time the Brown (re) appears and sings. No other diglossine (or hummingbird) was visible or audible during Brown songs. Brown only stays a minute and then flies off.

NOTE: Some minutes earlier, I saw a Brown (presumably same individual) in bush that was visited by Sean and Hummingbird XII. I.E. the territories of these 3 species are at least partly overlapping.

NOTE: There were several Acorn Woodpeckers flying about in the same general area when the mixed flock was visible. But they did not seem to pay any attention to the mixed flock, and none of the members of the flock seemed to pay any attention to them. (I.E. the Acorns here probably behave like the other members of the same species near Manzanique)

2:08 pm. Only a few feet further on, see single B. nigrocrinitatus us. Presumably same individual seen earlier. But now apparently alone. Feeding in bushes edge forest 8-10 ft up. Silent

2:10 pm. A few feet further on. Come across pair Yellow-bellies 20 ft up in tree feeding on small green fruit. Uttering CN's. Acorn Woodpecker j —————> Yellow-bellies. Then Acorn flies away. Yellow-bellies do not follow. Then Sooty Thrush j —————> Yellow-bellies! (This reaction quite definite. Thrush lands only 6 ft from tanagers. Then birds disappear from sight.)

I think that this group may be associated with PL - nigrocrinitatus seen earlier. If so, flock as a whole is very diffuse.

There apparently are some other birds in nearby tree tops. Probably members same flock. Uttering "CN"s



2:22 Same area. See 2 Green & White hummingbirds fighting furiously, but reluctantly in air. They also may be "numbers" of the group. Then see single Black Diglossa, presumably Brown, 20-30 ft up

Brown

in tall mature tree edge pasture. Possibly the same Brown seen earlier ??? If so, it definitely is associating with other species. Silent

Also see single Sooty Thrush only 20 ft away, 1 ft up in bush. Possibly it also is associating with group.

There are lots of Acorns around here. Sometimes close to other birds. Once Acorn supplants → Sooty Thrush. Certainly the Acorns are not what you would call "friendly."

There also is a single Oerthis around in the neighborhood

Several hundred yards further on. 9575 ft. 2:35 p.m. See pair of Sooty Thrushes alone, top tall tree edge forest & scrub. 35 ft up. Single Brown → Sooty Thrushes !!! Eventually Brown moves on. Thrushes do not follow.

Brown

9900 ft. 3:00 p.m. Edge another patch of forest. See single White-bearded Flycatcher 25 ft up. Noisy. Flies on. Then see single Brown in nearby tree. 40 ft up. Silent. There also are some other birds, even higher up in taller trees. But I can't identify them (yet).

Brown

Then see single Cy, in bamboo thicket, 20 yards away. Only 2 ft up! This must be another very different flock! Then see Cy high in tree 30 ft up. Not far from where Brown seen earlier. Silent. Feeding on small, round, green fruits

VS

Flock going gradually uphill. We follow. Can hear at least one Ruddy Flycatcher in neighborhood. Then see 2 "B. nigrocrinitatus" in scrub along edge road. 1 ft up. One individual is adult. The other is juv. Juv. does Q. These birds definitely do seem to be associating.



uniting with flock. This apparently is one of the areas where *B. nigr*  
*occidentalis* is commensal!

Then get better view of flock as a whole. Now includes at least 2 White-beards, at least 2 Redbills, 2 Yellow-bellies, 1 *Cnemidopus*, a variety of tree creepers and furnarids, at least 4 Wrens (all same species), a variety of hummingbirds, at least 2 of the Maroon-crested Montane Cotingas !!! (to my knowledge, this is the only place I have seen this species in mixed flocks), and at least one Setti, in addition to the *nigrocrinitatus*. Yellow-bellies f —————> group at least twice. *B. nigrocrinitatus* f —————> Setti f —————> group at least three times. I can't tell who is (or are) the leader(s). The *B. nigrocrinitatus* stay in scrub, 1-3 ft up. The Yellow-bellies vary from low scrub, 1 ft up, to tall trees, 25 ft up. All other species stay in trees, 15-30 ft up. Setti, at least, is feeding by picking insects off leaves. Group as a whole fairly quiet. Lots of "CN"s, but little or nothing else.

Group eventually turns and starts down hill. At least at this stage, it is fairly coherent. Birds 10-30 ft apart. More coherent than any other flock seen here today.

NOTE: The reason I am fairly certain that all or most of the more diffuse groups seen here today were definite social units is that we also have passed three large stretches of suitable looking forest and edge in which birds seemed to be completely absent.

3:40 p.m. 10,000 ft. See pair of the big *Butoraptes* (*montana* or *cucullata* or whatever it is). In second growth trees in midst mature forest. Silent and alone. Fly away immediately.

Catch up with same birds a few minutes later. Now see that



there are at least 4 Butterauger. High in mature trees, 40 ft up. There are also some smaller birds in same trees. Can't identify them.

Big Butterauger ♂ → group.

Reach 10,225 ft 4:05 pm This is not far below edge of Panamá, but forest still looks "upper sub-tropical".

Getting cold and windy.

Black I hear what looks like Black Dryden from area very thick low second growth edge pasture. Utters "Treet" Notes. But unfortunately, I can't identify it.

See single Sooty Thrush alone. 20 ft up in dead tree in midst low thicket.

See single Amazilia - like finch alone in low dense second growth scrub.

Single Sooty Thrush flies by. Silent & alone.

Starting back down hill 4:25 pm.

10,075 ft. 4:35 pm. See single White beard. 20 ft up in tree.

Apparently alone.

A little further down, see single Sooty Thrush alone edge rock slide. In sort of bamboo scrub. Flies into nearby trees.

Butter 4:50 pm Just below 10,000 ft. Approximate area where Butterauger seen earlier. See large flock. Includes at least 2 Yellow-faced Tanagers, 1 Seti, 1 White beard, 2 White-strikes, 1 A. atropurpurea, 2 adult and 1 juv. Blue & Black, 1 Cnemidophorus, a variety of farinarias and dendrocolaptes. Group moving thru second growth trees, also low open scrub, in area surrounded by mature forest. ADDITION: There is at least 1 Pl. atropurpurea with group. The 2 Hemiphanes species stay low in scrub, 2



- 5 ft above ground. Whitehead stays in trees, 12-30 ft up. All other species visit both scrub & trees, i.e. 2-30 ft up. Yellowfaces consistently in lead. Prevalence of other species varies. Groups as a whole noisy. Lots of "CN"s. R's by a tree-creeper. Two song phrases by Yellow-faced Whitestart. Group also coherent!

5:05 p.m. Ca 9700-9800 ft. Lots of Sooty Thrushes flying around alone in pasture full of (still erect) dead tree trunks.

5:10 p.m. 9675 ft. See pairs of H. atricapillus in bamboo scrub edge path inside forest. 3 ft up. Utter "CN"s. Apparently alone (altho there are other birds in tree tops 50 yds away).

9500 ft 5:25 p.m. Area where first very diffuse flock seen this afternoon. See single Yellow-bellied edge scrub & forest. 3 ft up. Uttering "CN"s. Apparently alone. But certainly there are other birds around in trees. Then see single ♂ Western Tanager, 1 Cy, and 2 Sooty Thrushes, all close together, in tree 30 ft away. 15-30 ft up.

I certainly saw Brun in same tree earlier this afternoon. I. E. Brun and Cy territories are at least partly overlapping here. And the 2 species apparently are not separated by rigid stratification. Brunns seem to be comparatively arboreal here

5:32. Hear Cy song phrase in distance. Long formless Tanager with little or nothing in way of Intro Notes.

Around back at the Finca 5:45 p.m.

COMMENT: Mixed flocks would appear to be as common here as in other parts of the Western Cordillera. Perhaps they are, on the average, somewhat less coherent here than in other parts. But this is a point which must be checked by further observation. In any case, if true, the greater diffuseness here could easily be explained by a



comparative rarity of nuclear species.

July 23, 1965  
Valley of Rio Urro

This morning, I will go along same path that we followed yesterday afternoon.

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

6:17 am 9455 ft. See group of at least 4 Pseudospingus.  
Edge forest. Flitting about in trees and scrub. 6-35 ft up. Very  
noisy. Lots of "chattering" greetings. But apparently alone. Then  
along Pseudospingus. Apparently "coincidental"

The wind is terrifically strong now!

On way up hill, hear quite a lot more Yellow-faces singing.  
But little or nothing else. Then see pair Yellow-faces alone. 15 ft up in  
trees. Uttering occasional song phrases.

Some single Sooty Thrushes alone in pasture with dead trees

6:53. Area where big mixed flock with both Cy and Brown was  
seen yesterday afternoon is now completely devoid of birds.

Just below 10,000 ft. See single Sooty Thrush alone. 30 ft up in  
tree tops. Uttering Alarm Calls.

A few feet further on, catch brief glimpse of 1 ft up in scrub  
along path. Possibly there are other birds nearby. But I can't see them.  
m. Only hear confused noises.

Around 10,000 ft, I can hear quite a lot more birds without being  
able to see them.

7:35 am. Light rain starts.



7:20 a.m. 10,050 ft. Come across family Blue & Black. Obviously same family seen yesterday. 2 adults & 1 juv. Very noisy. Lots of "fret" Notes. Juvs. Q's and is fed by parents. Today, this family is certainly alone. 10-20 ft up in trees.

Reach highest point reached yesterday 7:40 a.m. This place is called "La Esperanza". My altimeter now reads 10,175 - 10,200 ft.

See single Yellowbelly, 15 ft up in tree. Uttering "CN"s. Apparently alone.

Go on past forest, into open pasture with scrub. See pair Sooty Thrushes alone.

7:50 a.m. Hear Yellow face singing in distance.

More single Sooty Thrushes in pasture ca. 10,250 ft.

8:05 a.m. Reach area which obviously is alpine forest, almost "alpine scrub". 10,475 ft. Still very windy and cold. Nothing visible or audible except Andean Sparrows.

Further on, there are more single Sooty Thrushes alone.

Yarrow

8:15. Hear what sounds like Lafumayi s.l. song slightly uphill. At least one bird singing quite steadily. Notes have "screaky" quality which is characteristic of Laf songs in some other area. No other Agelaius or Whistler is audible at the time.

On way down hill. 11:45 a.m. Just below 10,000 ft. See single Sooty Thrush. Silent and alone.

Letta

11:55 a.m. A little further on. Still just below 10,000 ft. Area where Big Butterflies and last large flock seen yesterday. See another flock. Includes at least 4 Big Butterflies, one pair of Pittis, one Ammodramus, 2 or more Pseudospingus, 1 Yellow face, many tree-creepers, one White-bearded Flycatcher. Group as a whole quiet. On



by the Pseudospingus utter some loud chatter from time to time. All birds in trees, ranging 20-40 ft up. Group as a whole very diffuse. And has a tendency to go around in circles. But it does have some leadership and order of precedence. Cnemidophorus leads once, briefly. The Big Batrachus lead repeatedly!!! Pseudospingus and tree-creeper follow the leaders quite closely. The Lutes and the Yellowface tend to lag to the rear. And the Whitebeard is at the very end of the procession. Incidentally, it may be significant that the weather has been improving for the last half hour or so. Sun coming out, and it is getting warmer. Light rain stopped long ago. And this particular area is protected from wind.

Arrive back at Juica 12:45 pm.

COMMENTS:

I. My observations this morning would suggest that bad weather (at least cold and wind) discourages the formation of mixed flocks here. A resemblance to the Eastern Cordillera. A difference from Mandique.

Young  
Barns

II. Although some of the birds here (e.g. the Glens' and the higher altitude Barns) may be at the height of courtship or breeding display phase, it seems likely that most of them are long past courtship. Note the number of juveniles seen so far.

Going to work at level of Juica and below this afternoon.

2:23 pm. Inside "sub-tropical" forest. 8875 ft. See single Reddy Flycatcher alone. Perched on dead branches 12 ft up. Also making flycatching flights.

A few minutes later, a very diffuse mixed flock appears in view. Along tree-tops. All birds very high, 20-40 ft. Group includes at least



one Cnemidopus and one Yellow-faced Whitestart. Plus others which I can't identify. Cnemidopus f —————> Yellowface Yellowface f —————> Cnemidopus Yellowface f —————> Cnemidopus  
Birds uttering lots of "CN"s. But group as a whole doesn't seem to be making any progress in any direction! Ruddy appears to have disappeared (it probably left before flock arrived).

There also are at least 2 Acorns in this group of trees. But, as usual, they seem to be ignoring other birds, and vice versa.

Group still around 2:45. Now see that it includes at least 1 Blue Black. Feeding on small fruits. Also, apparently, taking insects off leaves.

Now more birds joining flock. Unidentifiable. But flock still remarkably diffuse.

Going back up hill (to where Diglossas seen earlier this afternoon) 2:55 pm.

4:25 pm. See single sooty Thrush perched alone, 2 ft up in scrub, edge forest.

A few yards further on, see 3 H. atropileus 4 ft up in scrub under trees. Uttering "CN"s and R's. But apparently alone. Scrub under trees here is "miscellaneous". Not bamboo.

H. atropileus disappear almost immediately. But then I see single Yellowface and 1 tree creeper (not close together) in general area where atro-pileus were earlier. Is this yet another very diffuse flock?

Sooty Thrush does not follow the other birds.

A few words later the atro-pileus come back. Retracing exactly their previous route. Yellowface and tree creeper seem to have disappeared.



When a few seconds later, and only a few yards down path, get new bird view of very large mixed flock high in tree-tops. Certainly includes Yellow-belly (us), one or more Cnemidophorus, one or more Yellow-face(s), a ♂ WCC, tree-creepers, many others. Group quite coherent, but I can't tell who is leading. I think that the Sooty Thrush, atropileus, and Yellow-face seen immediately before may have been "outliers" of this group. And the group as a whole may be a continuation of the large flock seen slightly higher up ca 3:45 pm. (described in my notes on mixed diglossini)

See some more Sooty Thrushes alone edge forest

5:02 pm. Right at edge forest and scrub. See pair BYB's (!) 6 ft up in small tree. Definitely alone. Fly off immediately. Leaving myself 5:07 pm.

July 24, 1965  
Valley Rio Urro

SEE TODAY'S NOTES ON MIXED DIGLOSSINI

Going along another path to the Páramo this afternoon

Reach edge pasture-scrub-forest, 9400 ft, 1:48 pm. Cloudy. Windy. Warm. Nothing stirring

2:00 pm. 9,550 ft Region of sparse forest. Rather widely spaced mature-looking trees, with lots of shrubby undergrowth. Come across very loose group. Includes at least 5 Yellowfaces (all apparently adult), 2 Cnemidophorus, 1 Yellowbelly, 1 Piprida (no. LXXXXIV - presumably arcuata), some tree creepers. All in tree tops, 20-40 ft up. All quiet. Birds very far apart. And group as a whole moving in wrong



ular circles. For a while, the Yellowfaces were leading. But then the other birds stopped following, and turned in another direction. So the Yellowfaces also turned, and followed the others.

At one point, there was a single hummingbird ~~the~~ feeding on pink flowers 8 ft up underneath flock. But it apparently left almost immediately, apparently without paying any attention to the other birds.

Everything quiet now 2:20. Flock has moved off.

NOTE. This whole path seems much drier than the other one.  
Reach beginning alpine or semi-alpine scrub, 10,200 ft, 3:10 pm.  
Rain starts 3:30 pm 10,300 ft

Up till now, we haven't seen nor heard a single bird.  
But now I can hear a variety in the neighborhood.

See group Blue & Blackbirds 3:37. Probably 2 or 3 individuals. 20 ft up in scrubby trees. Very noisy, but apparently alone.

Rain stopped, at least temporarily. Starting down hill 3:40 pm 10,050 ft. 3:55 pm. Come across another mixed flock. Includes at least 2 Big Butteraups, 2 Whiteheads, 2 Sooty Thrushes, 1 or 2 Yellowfaces, 2 Ocellulars, 2 PL Atlapetes. Edge forest. Group quiet. Very diffuse. PL's range 2-20 ft up. All others 7-25 (or 30).

Big Butteraups apparently leaders. When they fly up hill, all the others drift after. Sooty Thrushes certainly follow group at least twice.

Big Butteraups must be similar to Towhees in their social role. Tend to make relatively long flights. This often takes them away from groups. When it doesn't, however, (i.e. when it doesn't take them "completely out of range" of their companions), it provides a power



(86)

ful attractive force — "pulling" all the other birds in the wake of the Buttercupis.

There also were some hummingbirds around this flock, but I don't know if they were "integral" members of the group or not.

Arrive back at Finca 4:40 p.m.

NOTE: I wonder why I haven't seen any GT's here. Is it too high for them above ca. 9300 ft???

July 25, 1965  
Valley Rio Urroo

Going to work at level of Finca this morning. Arrive 5:40 a.m. Clear. Cool. Occasional quite strong wind. Both Andean Sparrows and Thrushes in full song when I arrive.

6:10. See a couple of sooty Thrushes alone, in forest edge.

Go on down hill.

6:35. Only a few yards further down. See pair of BYB's in top tall tree, 30 ft up. Silent and definitely alone.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

8:05 a.m. 8900 ft. Inside forest. See large mixed flock. Includes at least 2 BYB's, 3 (probably more) Cnemoscopus, 1 GT (!), 1 Yellowbelly, 1 Sooty Thrush, others. Group as a whole quiet. BYB's, Cnemoscopus, and GT forming very coherent group. All in tree tops, 20-40 ft up, all staying close together. Yellowbelly somewhat apart. When first seen, 30 ft up in tree, about 20 ft from a BYB. But then flies down into scrub. Lands 10 ft up. And I am not sure that it continues to associate with the others. Sooty Thrush possibly even more "detached".



Suddenly appears in tree. Utters lots of Alarm Calls. Then disappears again. Possibly it appeared simply because I was nearby.

Leaving 8:35 a.m.

NOTE: The local people call the parakeet here "El Morro".

COMMENT: All my later observations have confirmed my first impression that the social behavior of most tanagers, finches, and warblers here is very similar to the corresponding behavior of the same species in the southern part of the Western Cordillera.

In writing up the results of this whole project, when completed it will not be necessary to distinguish two distinct "regions", i.e. "the southern part of the Western Cordillera" and "the northern part of the Western Cordillera" in the discussion of gregariousness and mixed flocks (although it probably will be necessary to distinguish between these regions in the discussion of Diglossini — see today's notes on mixed Diglossini).

The fact that the "non-diglossini" species here behave in much the same ways as on Manchique and in the Farallones is good supporting evidence that my hypothesis that gregariousness is causally related to frontier conditions and amenability to "island hopping" are correct.

SEE BACK



SUM TOTAL ALL OBSERVATIONS = 28 hrs 00 min

All spent in areas where flocks would be expected to occur.



Journal July 22, 23, 24, 25 (1965)

Inds Alone

|||||  
 |||||  
 ||||| (179)

Inds in Flocks


Largest no. Inds in Flocks

(24)

Total No. Flocks

||||| (24)

No Highly Organized Flocks

||||| (9)

Largest no. Species in Flock

(14)

Species in Flocks

	0	-
	5	5
	2	6
51	2	3
	2	12
	14	2
	-	17
	10	-
20	3	TOTAL = 99
	2	(for 17 flocks)
	5	-
	-	-
	-	-
10	2	-
	8	-
	-	-
3	3	(17)

SEE OVER



Total no. flocks seen = 24

Inds. in flocks = 218

Average no. inds. per flock = 9.08

Species in flocks = 99 (based on 17 flocks)

Average no. species per flock = 5.81



August 7, 1965  
Munchique

Arrive top mountain 5:43 a.m. Just getting light. Fog.  
Little wind warm.

Very few bird sounds on the way up. Now, 5:49, there are a few thrush calls audible here by the police post. Then a variety of bird sounds. Nothing very recognizable. Then quiet again. Then some hummingbird and/or flycatcher sounds.

It looks (or sounds) as if all or most species are not breeding here now.

The altitude here, according to my altimeter now, is 2880 m., 9400 ft.

Fog starting to lift 6:05 a.m. Only a few bird noises audible. Nothing much moving around either.

Then see single White-beard alone. Perched 6 ft up alpine scrub edge road. Uttering long phrase after long phrase, in rapid succession. Perhaps this individual is in breeding condition.

A few yards further on, see single Yellow-bell moving thru scrub. 2-6 ft up. Moving at intervals. Pauses close by White-beard. Latter does not stop singing. Yellow-bell moves on. White-beard does not follow.

There is a variety of hummingbirds here. But I don't recognize any of the species.

At least one of the hummingbirds here is "Rufous-capped" (no XIV)

Hummingbirds are fighting among themselves.



4 6:24 a.m. A few yards down road. See pair of PL *Atlapetes* in alpine scrub. 1-12 ft up. Very noisy. Lots of "SHN"s, "PN"s, and Greeting Switters and Chatters. Apparently alone.

6:23. Fog completely gone now. Seen trying to come out thru clouds. And all birds completely silent!

Then hear a few Rubens Longs in distance.

3 6:40 See mixed flock. <sup>11</sup>5 Yellowbellies moving thru trees edge alpine scrub and "upper sub-tropical". Very noisy. Ranging 6-25 ft up. Picking insects off leaves. Then they fly across road. Followed by a small bird of another species (warbler size, but unidentifiable).

5 A few minutes later, see pair of GT's. Moving thru alpine scrub. 6-10 ft up. Silent. Moving in direction of Yellowbellies. But (still) at least 100 yds away.

6 GT's move off. And a minute later, see single Big Butthercup <sup>13</sup> is moving thru scrub - in opposite direction! Silent.

Is a big mixed flock in process of formation now? Still in the disorganized "mulling about" phase?

Also 1 or 2 Blue & Orange (S)  
9 Yes!!! A minute later, see group (again). Now back on side of road where Yellowbellies seen first. Group now includes at least 3 Yellowbellies, 2 GT's, 2 Big Butthercups, 1 Ay, 1 woodpecker of a species not seen before (red cap, golden olive back), and one large tree creeper. Group as a whole has become coherent now. All birds quite close together. Ranging 1-30 ft apart. At least twice, GT supplants → Yellowbelly. All birds ranging 15-35 ft up. Ay feeding on small white berries. Using same technique as the Pico de Espejo bird. GT's and Yellowbellies eating same berries; also



(2) picking insects off leaves. Most birds quiet. But Cy utters lots of song phrases. Long Twitter preceded by "Tut" Intro Notes

It seems obvious that Yellowbellies formed the "original nucleus" of this flock. Moving about conspicuously and noisily - at first alone. But then their conspicuousness gradually attracted the birds of other species.

Eventually, one of the Yellowbellies in this flock flies down hill. Into upper sub-tropical forest. All other birds follow, except (the other) two Yellowbellies. The latter remain behind. Then fly off in opposite direction.

12 Then complications set in! Just as I am finishing the above account, 17:15 am., pair of PL's appears. Moving down hill along road. Moving. Obviously same pair seen earlier this morning.

13 Move into the exact same trees where big flock seen earlier. Then single Whitestripe appears. Whitestripe f —————> PL. PL's range 2-30 ft up. Whitestripe 2-15 ft up. Whitestripe quiet or silent. At this point, I thought "aha! Two different mixed flocks with overlapping 'flock ranges'."

Then PL's fly across road. Whitestripe f —————> PL. Immediately, large flock appears in trees just vacated by PL's and Whitestripe. Obviously largely the same as the large flock seen earlier. (I.e. the birds must have started up hill again - thus re-occupied trees occupied earlier.) Yellowbelly (us) apparently still in lead. Then this large group flies across road, obviously following PL-Whitestripe group!

Thus, this would appear to have been an example of two "sub-flocks" merging. And, at the same time, the leadership of



most of the birds was transferred from Yellow-belly (ies) to PL's!

Then go up road, in direction flock went. 7:44. Come across 2 Yellowbellies. 10-20 ft up in alpine scrub. Uttering "PN"s. Presumably some of the birds that were with flock earlier. But now definitely alone. (Either that or they have lagged very far behind as a "rear guard".)

More Dufuna song 8:28 a.m. Only slightly down hill from Police Station.

And from this, birds generally very quiet now. Fog is coming in again.

Actually, the whole area seems to be quite deserted now. Presumably most of the local birds have "gone off" with one or more flocks.

Go down into upper part "upper sub-tropical" forest.

9:03. (9400 ft according to my altimeter now, which is varying a little with T° and pressure.) See single Blue & Black. Definitely alone. High in trees, at least 40-ft up. Uttering "PN"s. This on at once.

9:15. Slightly down road. Same place where largest mixed flock seen on my first visit. See enormous mixed flock. Obviously part by the same as the flock seen earlier this morning. This time, I saw only part of group. But I did notice the following.

Group includes at least 1 GT, 1 Blue & Orange, 1 Yellow-bellied, 1 Dufuna (1 guy - with yellow at gap), 1 Big Butorpus, 3 or more Cnemidopus, 2 Whitestripes, 2 H. atro-pileus, 3 or more of what appears to be B. luteoviridis (me!), 1 PL Atlapetla, 2 or more Yellow-bellied Whitestarts, 1 Cy, 1 ♂ and 1 ♀ WCC, 2 Kitties, various tree-creepers, and a group of at least 5 small, dull-brown, rather squirrel-like fernariids. WW



Group as a whole very coherent. Moving rapidly along on both sides of road.

It is just barely possible to recognize two slightly different associations within the flock. A "scrub sub-group" and a "tree sub-group." Most birds in each sub-group tend to stick pretty much to the "preferred" level of their sub-group. But the two groups are not very well segregated "micro-geographically", insofar as any individual of one sub-group may be nearer to an individual of the other sub-group than to the nearest other individual of its own sub-group.

"Scrub sub-group" includes all the Hemipungus and Barleu terus spp., the Yellowfaces, the Settis and WCC's, the Cy, and the Synallaxis-like feruariids. Also the Blue & Orange!

Most individuals of this sub-group range 1-15 ft up in very diverse scrub on one side of road. Settis and WCC's probably averaging higher than the others. Both Yellowfaces and Cy come down to the ground at least once.

The "tree sub-group" includes GT, Yellow-belly, Big Buttercup, Cnemidophorus, and tree creepers. All or most individuals in this sub-group ranging 10-35 ft up.

The PR and the Dubuna range from high to low, throughout the usual ranges both sub-groups.

Group does not have "regular" or "persistent" leadership. Advancing on a very, very broad front!!!! sort of "heating" the whole area. Almost every species slightly in advance of the others, at one time or another.

Within the "scrub sub-group" however the Whitestripes and/or H. atro-pileus probably are in the lead slightly more frequently than all



or most of the other species.

There is some tendency for the brightly colored and more or less strongly arboreal tanagers, i.e. the GT, the Big Buthraupis, the Yellow-belly (ies), and the Duburnias to stick fairly close together. The Blue & Orange probably does not associate particularly closely with the other bright tanagers. The other arboreal species, i.e. Oreoscoptes and the tree creepers, certainly do not associate particularly closely with the bright tanagers. But they probably do tend to associate fairly closely with one another.

*Little WCC* The Littles and WCC's also tend to associate with one another particularly closely. Usually the WCC's move along behind the Littles. (The WCC's probably really are following the Littles. A real interspecific preference. But I can't be sure about this, simply because there usually are other birds in front of the Littles.)

*Little WCC* The Cy does not show any obvious tendency to associate particularly closely with either Little and/or WCC.

The Oreoscoptes fight among themselves very frequently. Group as a whole noisy. Lots of "CN"s and other short notes. No Whitestripes, Cy, Yellow-belly (ies), and Duburnias also sang from time to time.

NODWA when Cy is singing.

Group eventually disappears down hill.

*the WCC* I go back up road. 10:21 a.m. Border alpine scrub and "upper sub-tropical" forest. See small group which might, conceivably, be a detached part of the large mixed flock seen earlier. Includes 1 GT, 1 Cy, probably others. In trees, 15-30 ft up. Cy f —————> GT. *cy* Cy feeds on white berries (same species seen eaten by Cy earlier this



this morning. Perhaps these birds are in same tree.)

Sun coming out again 10:30. (The second "wave" of fog never actually quite reached me - or the flock (s) - this morning.)

Leaving 10:40 a.m.

#### ADDITIONS

I. All the birds seen feeding in the large flock seen this morning appeared to be taking insects, in one way or another. This may help to explain why they were advancing on such a broad front, "beating" the vegetation in front of them.

II. I saw at least 3 Sooty Thrushes alone this morning, without bothering to mention them in my notes.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

Going up to the Rancho this afternoon

2:11 p.m. 8000 ft. Hear some Slate-throat songs in wood in ravine below me. NODWA. Only a few phrases. Then hear quite a lot more Slate-throat songs as I continue along path. At least 2 individuals singing. Still NODWA.

2:40 p.m. Edge same woods. 8050 ft. Catch glimpse of what is probably mixed flock. Certainly includes at least 1 or 2 Coryprocta flavinucha, 1 bird (flycatcher?) of another species. From sounds, I would suppose that there were a lot more birds in neighborhood.

C. flavinucha ranging 5-30 ft up in trees and bushes.

Yes! There are more birds around. A whole procession suddenly appears. All birds strung out, quite far apart (usually 20-30 ft). But all moving rapidly and steadily in the direction that C. flavinucha (et al) took a few minutes ago. Birds appear in this order. First, one cyanocephala, second, one fly, third, two Slate-throats (definitely integ



al members of the aggregated flock, fourth, one rufinucha, and fifth and last, one Yellowbelly. cyanocephala steep high, 20-30 ft above ground. Slate-throats probably similar. Cy seen only low, 5-8 ft up. rufinucha and Yellowbelly ranging 4-30 ft up. Slate-throats sing while with flock. NOBWA. All other birds quiet.

3:00 pm. A little further along path, see two squirrels. Jaggy, but not annotated with birds. In trees in pasture. Fairly small. Dull brownish above. Rufous below. Some rufescence on tail. (NOTE: I also saw one squirrel, possibly same species, along this morning.)

Then see single Sooty Thrush alone. Also in trees in pasture.

3:10 pm. Another patch of woods 8190 ft. Hear what seems to be like another mixed flock. Lots of "CN"s. All I can see is one Sooty Thrush (15-20 ft up), 1 Yellowbelly (4 ft up), and 2 Tangara xanthocephala (ranging 6-20 ft up). I can't tell if they really are reacting to one another or not.

ah Yes! The 2 xanthocephalas fly off into distant trees. Go from tree to tree, 20-30 ft up. Apparently, neither Yellowbelly nor thrush follow. But at least 1 cyanocephala appears. cyanocephala f ———→ xanthocephala at least twice. Moving thru same levels of trees.

Then see single flavinucha 20 ft up in tree. Right where xanthocephala used to be! Apparently no other birds close by, now; but this flavinucha might well be an outlier of the flock.

3:30 pm. Come to patch of mature looking forest. Just below Panchito still. 8200 ft. See single squirrel (usual species) in same trees as Acorns and hummingbirds. Can't tell if birds and mammal are



(2)

reacting to one another or not.

Go on way past Ranchito. Along trail thru forest. Reach 8500 ft 4:00 p.m. Bottom of fog level. Can hear lots of birds in tree-tops on way thru forest; but can't see them.

Starting down hill 4:15 p.m.

III 16 4:25 p.m. 8450 ft. See single Big Butteraupis, silent and alone, 40 ft up tall tree edge clearing. Flies away immediately. Back in direction from which it came. Then I hear quite a lot of miscellaneous bird sounds that area. Then single Western Tanager flies into same tree Butteraupis visited earlier. Also 40 ft up. Now, flies on opposite the direction taken by Butteraupis! Then I hear quite a lot more bird sounds same general area. Cat's brief glimpses dark forms moving in tree tops. They get somewhat better view. This is really quite a large flock. At least 15 individuals. Besides Western and Big Butteraupis, group includes at least 2 Cnemidophorus, 1 GT, 1 yellowish flycatcher, 1 Yellow-faced Whitestart. All quite noisy; lots of "CN"s. Yellowface ranges 12-20 ft above ground. The rest of the birds range 20-40 ft up. Yellowface and GT bringing up the rear guard. From the general direction in which group is going, I would deduce that Big Butteraupis probably is in lead.

70

Fog is coming down to this level now 4:43 p.m.

Flock disappears (down hill?) quite rapidly. Quite coherent!!

Going on down myself.

III 35 5:01 p.m. Below Ranchito. Patch of forest where xanthrocephala seen earlier. See mixed flock. Includes 3 Blue & Blacks, 2 Yellow-bellies, one nondescript grayish flycatcher. Edge forest and scrub. Blue & BL



arks hanging from ground to 20 ft up. Yellowbellies 3-12 ft up. Flycatcher about the same. 1 Cyanocephalus j —————> Blue & Black.  
 But then Cyanocephalus goes off. No one follows. 1 Blue & Black j  
 —————> Yellowbelly. Since Yellowbellies j —————> Blue & Black.  
 While I am watching this group, I see that there are 3 Sooty Thrushes in trees about 200 ft from mixed flock. Also 1 Green Tanager in trees 200 ft away in opposite direction.

Then Yellow-belly flies across open pasture, going from one isolated tree to another. Blue & Black j —————> Yellowbelly. Flycatcher follows along behind Blue & Black. Then, the Sooty Thrushes also cross pasture! Going in same direction as the Yellowbelly and Blue & Black, but following a slightly different route. Tanager does not cross pasture.

Thus, I think that the Sooty Thrushes must be considered "real" members of this mixed flock — but also "semi-detached". Remaining on "outskirts".

5:43. Almost same area where Ag-C. flavunucha - rufinucha - slate-throat - etc. flock seen earlier. Flock apparently still around. But now seems to include even more birds. Unfortunately, I cannot see them well enough to identify most of them. But I do see 1 Cyanocephalus. And two Sooty Thrushes j —————> group.  
 Then I see one Yellow-faced Whitestart in group. 15-25 ft up in tree.  
 I know that Slate-throats are still with group, because I can hear them singing. I can't see them, but I can tell that they are at "opposite" end of group from Yellowface — at least 100 yds away. NODWA while Slate-throats sing. Yellowface doesn't sing at all.

Group as a whole very noisy. Lots of "CN"s and "PN"s, in ad



51 Action to the slate throat songs. ~~WIII~~ 2606

Stopping observation 6:00 p.m.

COMMENT: It would appear that the birds here are just about as gregarious, and in much the same ways, now as they were a couple of months ago! This is quite remarkable — in view of the fact that the weather is very different now, and that most birds must be in a different stage of their annual cycle.

It is also interesting that mixed flocks were common and highly organized today — in view of the fact that the weather today was good, on the whole.

August 8, 1963  
Munchique

Arrive top of mountain 5:17 a.m. Weather much like yesterday. Fog. But it is colder and windier than yesterday.

Only a very few miscellaneous bird sounds when we arrive 5:17 a.m. Hummingbirds fighting among themselves.

A moment later, White head starts singing usual place.

Then hear a greater variety of sounds slightly downhill.

Everything quiet again 6:04 a.m.

Single bird flies by, alone, in fog. Uttering "secret" Notes.

Can't be identified by sight, but sounds like Yellowbelly.

Sun trying to come out 6:15 a.m.

There is a slight, but very slight, recrudescence of bird noises when the sun finally appears clearly 6:21.

6:36 See single Yellowbelly 3 ft up in alpine scrub. Utters a



few notes but fairly quiet on the whole. Definitely alone.

6:38 Near Duluma looking down hill.

6:53. See single Sooty Thrush alone, 10 ft up in alpine scrub just below police station.

It is windy and cold here today, in spite of the sun. Is this having a discouraging effect on the birds?

Light fog back 7:00 a.m.

7:05. Go down to upper border "upper sub-tropical" forest. See pair of Yellowbellies. Definitely alone. 40 ft up in tall mature tree. Then 20 ft up in tree with white berries where flocks seen yesterday. Definitely eating the berries. I.E. They are competitors of Cy.

Near Duluma looking down hill 7:15

7:40 a.m. 9200-9100 ft. 2780 m. Region of rather scattered tall mature trees with lots of scrub underneath them. See large mixed flock. Essentially a "scrub" flock. Possibly some of the same individuals seen in flock(s) yesterday. But group as a whole very distinctive indeed!

When first seen, group includes 2 Atlapetes rufinucha, at least 2 (probably more) PL Atlapetes, 1 A. torquatus (sic!), 1 Yellowface, 2 or 3 Whitestripes, 1 or 2 H. atropileus, 1 Cy, and 2-4 of the dull brown Synallaxis (same species seen yesterday).

A. rufinucha consistently in lead at this time !!! Very closely associated with both PL's and Whitestripes. PL's f —————→ Rufinucha repeatedly (at least 10 times). Whitestripes f —————→ rufinucha repeatedly (at least 10 times). Relative positions of PL's and Whitestripes rather variable. Sometimes one species in lead, sometimes the other. Whitestripes f —————→ group of rufinucha and PL repeatedly (also at least 10 times). PL's f —————→ group of rufinucha and W



Whitetrupes repeatedly (also at least 10 times).

A torquatus very closely associated with rufrinucha, PL, White stripe group for at least several times. torquatus f ———→ group repeatedly (at least 8 times). Then torquatus supplants ———→ PL's at least twice. Obviously hostile. Then torquatus seems to disappear. Presumably stops associating with group.

This rufrinucha - PL - Whitetrupe - torquatus group very coherent. Birds only a few inches - 2' apart most of the time. All birds ranging from ground - 5 ft up.

The atropileus and Yellowface certainly were associating with the other birds. Both species f ———→ group repeatedly. But they did tend to maintain greater distances between themselves and the Atlapetes - Whitetrupe "nucleus". Usually 1 - 4 ft. They did not, however, tend to associate particularly closely with one another. Both usually ranged 1 - 4 ft up.

W The fly apparently was with group only a few minutes. In some b, toward rear. 3 ft up. Then flew up into tree, 20 ft up, and apparently left group.

The dull-brown Synallaxis consistently brought up the rear. Ranging 6" - 2' up in scrub.

Then the group crossed the road and went to area where scrub under trees was a little more "lush" and taller. About this time, the leadership began to change hands repeatedly - back and forth. rufrinucha, Whitetrupes, atropileus, and Yellowface all in lead at various times. Each species in lead repeatedly. All ranging from ground (in the case of the Atlapetes spp.) or 1' up (in the case of the tanagers and warblers) to 10 ft up in scrub. Still being followed by dull-brown Synallaxis.



- 170 And somewhere along the way they pick up at least 1 tree-creeper and  
 173 2 (or 4!) Atlapetes brunneinucha. The brunneinucha ♀ → group repeatedly (at least 10 times) !!!

Synallaxis, brunneinucha, and tree-creeper stay relatively low. Ground to 3 ft up in the case of the first two species. 1 to 3 ft up in case of the third.

Group still very coherent at this time.

Group also attracts 1 White Throated Hummingbird. Joins and leaves the group repeatedly. Flitting about all over the place. But definitely keeps pace with the group as a whole. Certainly an integral member of the group.

- 175 Group also attracts 1 Big Buttercup. Flying around high in trees above the other birds. 30-40 ft up. Also keeping pace with group.

Atlapetes spp., Hemiprocne spp., Yellow face all noisy. But neither Atlapetes nor Yellowface sing. But one or both Hemiprocne spp. utter(s) lots of Rattle-Howls. Other birds constantly quiet or silent.

White throat feeds on flowers (including tubular purple ones sometimes favored by Albis). Big Buttercup apparently doesn't eat at all while with group. All other species apparently looking for insects all or most of the time. Probing in crevices, twigs, leaves, etc.

NOTES: This could be described as a "mixed Atlapetes flock". Rather like the one seen near Belmura a couple of weeks ago !!! And certainly the brunneinucha's could be described as "passive nuclear".

Are the brunneinucha's really allogregarious here ??? If so, it would be a below (or the exception) to my general rule that birds in divisura tend to be more gregarious than individuals of the same species.



in the Andes!!!

Fog gone again. ca. 8:45 a.m.

Going back up road. Everything very quiet 9:10 a.m.

9:28. Upper edge "upper subtropical" forest. See another mixed

HIT  
Sittis  
WCC  
NO ed flock trees and scrub along road. Includes at least 2 Cnemidophorus, 1 Blue & Orange, 2 Sittis, 1 ♂ and 1 ♀ WCC, 1 Chamaeceryle, 1 woodpecker (Green Crested cap, golden back - same species as yesterday), 2 White bearded Flycatchers. Can't see who is leading. Possibly Sittis part of the time. Sittis and WCC's ranging 6-30 ft up. Picking insects off leaves. Blue & Orange ranging same elevations, but I can't see what they are feeding on. Cnemidophorus stay high in trees, 30-40 ft up. Picking insects off leaves. Flycatchers and woodpecker probably ranging 20-30 ft up. Group as a whole coherent. Only moderately noisy.

There was at least one fight among the Cnemidophorus.

Sittis  
WCC The Sittis and WCC's tended to associate with one another particularly closely. I think that I can say that this is "usual" now. And the WCC's certainly followed the Sittis repeatedly.

NOTE: It seems very likely that some of the birds in this flock, like some of the ones in the "Atlapetes flock" seen earlier this morning, were members of the very large mixed flock seen yesterday. I.E. the "composition" of the flocks here is fluid. And individual birds may have some "choice" as to which flock(s) to join every morning.

10:01. Somewhat further up road. See single Sooty Humbird a low. Flying across road.

Leaving 10:20 a.m. Everything dead!

NOTE: I don't think that the above comment on Atlapetes brunnei-nucha is very bright. For several reasons! In the



first place, I certainly have seen bracones much several times apart from mixed flocks here. In the second place, if it is really allogregarious here, it is the second case of the kind that I have observed. Remember the Red-throated Whitestart!!! Possibly there is a general rule that individuals are more allogregarious here than individuals of the same species in Chiriqui - altho the latter are more allogregarious than other individuals of the same species in other parts of the Andes. (Probably the BCBT is an exception to this general rule. But its case is complicated by changes in autogregariousness.)

Going to work along the highway this afternoon. Cloudy. Fairly warm. Occasional sprinkle of rain. Fog (coming in from usual place) has reached very far this afternoon (almost to store).

2:45 pm. See single White-throated Hummingbird. Feeding 3 ft up in "hedge" along stream. Definitely alone.

NOTE: There is almost no wind down here this afternoon.

3:00 pm Near where "Glare" was last year. Cattle Creek glances of what may be small, diffuse, flocks in fog in tree-tops. All birds quite unidentifiable.

3:15. See a couple of sooty Thrushes alone in scrub by road.

3:20. A few yards further along road. 8190 ft. Come across

4 distinct mixed flocks in heavy fog. Includes at least 1 Whitestripe, 1 Cnemidophorus, 3 or 4 large yellow-breasted tanagers (presumably Bu theraapis and/or Couprocoma spp.) Whitestripe in scrub 6-12 ft up. Other birds in small mixed growth trees 15-30 ft up. Flock apparently fairly coherent, but not going anywhere. All or most birds utter a lot of "CN"s, but nothing else.

Fog really too thick. Going down road 3:40 pm.



As I start down road, Cnemidophorus - White-throated flock starts to accompany me. And then fog lifts momentarily. So I see quite a lot more of the flock! Group also includes at least 1 Cyanoccephala, Chlorospingus canigularis, 2 H. atripileus, 1 Cy., 2 Yellow-faced Myiarchus cinerascens, and some tree creepers and/or furnariids.

C. canigularis in small trees, 12-20 ft up. Cyanoccephala ranges in both trees and scrub, 2-20 ft up. H. atripileus low in scrub, 2-6 ft up. Yellow faces in trees, 10-25 ft up. Tree creepers and furnariids low, ca 4-8 ft.

Group also includes 1 Atlapetes rufinucha! Low. On ground and in low scrub ca 2' up.

Behavior of Cy. rather interesting. In low scrub (large blackberry) 1-3 ft up. Picking insects off leaves. I.E. in quite typical Albi habitat. (I have never seen an Albi at this particular locality, but there certainly was a "glare" only a few hundred yards down road a couple of months ago.) Swainson's is the lowest altitude at which I have seen Cy. around here?

All birds still uttering lots of "CN"s. A. rufinucha also utters one burst of "grating" chatter or twittering chatter. Possibly there are two individuals of the species here.

Group still coherent, and still not making much progress! Finally, group disappears 4:10 pm. Goes into forest, I think.

A little further down road, fog has completely disappeared!

4:22 pm. Only a little bit further down road. Come across another mixed flock. Includes at least 20 birds. Many of which I can't identify, but group does include at least 1 Cnemidophorus, 2 Chlorospingus



174 ques of a species I have not seen (or at least not recognized) before  
(pale gray breast and belly), 1 GT, 2 Yellowfaces, some tree creepers.  
Birds uttering only "CN" notes. Ranging in thick second growth 10-20  
ft up. Group very coherent. Moves rapidly up hill. Cnemidophorus  
He is probably in lead at least part of time. HHHHHHHHHH

ADDITION: Group also included 1 woodpecker with red cap  
and golden back.

Return to Finca 5:00 pm Fog coming in again

NOTE: The Chlorospingus in the last flock seen this after-  
noon was semifuscus.

August 9, 1965  
Munclique

Going to work where I thought I may have seen a carbon  
area s.l. or a lafresnayeri s.l. a couple of months ago. Arrive 5:40  
a.m. Just getting light. Cloud coming up. Windy. Cool.

A fair amount of miscellaneous bird noise 5:45. Certain-  
ly more than on the top of the mountain!

Atlapetes White Song down hill 5:49. One phrase.  
NODWA. Then some more NODWA. Sounds like rufinucha.

Birds already getting quiet 5:55 a.m. It really is very u-  
nidy here now!

According to my altimeters, now, the altitude here is 8650  
ft, 2650 m.

5:58 a.m. One Yellowface song in distance. NODWA. Then  
some more Atlapetes White Songs. NODWA



There really are quite a lot of Atlapetes Whitth songs in the neighborhood! At least 4 individuals singing. Is this species breeding now???

6:05. Hear one more Yellow face song in distance. Completely overlapped by Atlapetes Whitth songs.

See a number of Sooty Thornbills flying around. Alone. Everything dead quiet 6:20 a.m.

17 6:22. See single Yellow face. Silent and alone 3 ft up in sparse scrub on rock slide.

14 6:28. Some distance further along road. See pair of rufinucha in second growth scrub on slide. 3 ft up. Uttering "Greeting" "Twitter" and "Tills". Apparently alone.

6:35. More Yellow face songs in distance. NODWA. Going back along road, see single maroon-capped mountain cotinga. Silent and alone. 6-8 ft up in sparse scrub on slide 7:01.

Then see another single Sooty Thornbill alone.

13 A little further up road, catch glimpse of what is almost certainly a Truberry! (Black wings, bright blue rump.) In second growth on old slide. 3 ft up. Silent. Apparently alone. Disappears immediately.

16 7:28 a.m. 8450 ft. Region where slide vegetation starts to merge with "upper subtropical" forest. See single rufinucha 3 ft up in second growth scrub. Uttering lots and lots of "Seeeeee" Notes. There also is a Coutspies-type flycatcher in same scrub. But I can't tell if the two birds are reacting to one another or not.

This region is rather protected from wind.

Sun coming out 8:10 a.m.

17 8:20 8850 ft. See single Yellowbelly, definitely alone, in tops



small trees edge road. 20 ft up. Very quiet. Only occasional "CW"s. Apparently taking insects off leaves.

8:29. Just a 100 yds down road. Hear lots of Hemiprocne or Bailetonus-type R and "CW"s in low scrub-under tall bare trees. Unfortunately can't see birds. Then single Yellow-belly flies into nearby tree. 30 ft up. Silent. Apparently attracted by sounds in scrub. I.E. definitely joining. Yellow-belly only stays a few minutes. Then disappears. Then a ♂ Albi suddenly flies out of the scrub from which the sounds were coming. Hits rapidly thru bushes and then disappears also. But sounds continue behind him. I.E. it was not the Albi which was making the noise. Albi probably came only to try to "evict" the Bailetonus or Hemiprocne.

Things in general are really unbelievably quiet today!

9:10 a.m. Back to 8450. Second growth on old slide. See definite mixed flock. Another "mixed Atlapetes" flock. Includes at least 1 rufigula, 1 PL (iii!), 1 Myiarchus, 1 Yellow-face. Also others. All ranging 2-6 ft up. rufigula probably in lead. Yellow-face certainly in rear. One of the Atlapetes, probably rufigula, uttering lots of "Teeeee" Notes. Other birds quiet.

This is almost exactly the same spot where single rufigula was observed uttering lots of "Teeeee" Notes earlier this morning. Probably same individual in flock now. If so, rufigula probably for med the "original nucleus" of the flock.

Group as a whole very coherent. Parties rapidly up hill.

9:40. Back up just below 8850 ft. Where Albi and Yellow-belly were earlier. Definitely a mixed flock here now. Includes 1 rufigula, 2 Yellow-bellies, others. rufigula ranges from ground to 6 ft.



up. Yellowbellies in trees, 12-25 ft up. rufinucha utters lots of "see-see" Notes. Yellowbellies also occasionally noisy. Can't see who is leading.

Leaving 7.55 a.m.

NOTE: I think that the poor development (i.e. small size) of mixed flocks this morning, must have been an effect of the wind. Many birds apparently stayed "hidden", i.e. well under vegetation, and thus were not in a position to see, or be seen by, other species. (One word of explanation may be added in this connection. Although the last place (s) I worked was (were) protected from the wind, the wind continued to blow with full force on other parts of the mountain throughout the whole morning.)

Going to work on Ficus this afternoon. Go up steep hill (first place I went during my first visit a couple of months ago) along side small woods. Weather half cloudy, half sunny. Lots of wind (still)

2:30 pm See single Agnornis-type. This probably is real Agnornis (streaked white throat, rusty below). In trees, 15-20 ft up, edge small patch scrub in pasture. Definitely alone.

This is not far from where fog usually reaches in afternoon.

Go up to highest point of this hill. 8550 ft. Just at the edge of fog this afternoon. Everything very quiet

4:10 pm. See single Yellowbelly. Quiet apparently alone 4 ft up in scrub-edge pasture. (This scrub is very low, but thick and possibly mature. May be low because of constant wind in this area.)

Starting down hill 4:15 p.m.

A few yards down, see single Sooty Thrush alone. In tree edge pasture. Silent.



4:28 pm 8470 ft. See mixed flock. Includes at least one Compso  
flaviventer, Cyanocapla, & large tree creepers (same species), and  
 T. flaviventer. All birds 15-20 ft up in trees edge pasture. Moderately  
 noisy "CN"s. Compso in lead part of the tree. Cyanocapla in  
 lead part of the tree.

Fog coming in further 4:45 pm  
 Get back to house 5:10 pm

August 10, 1965  
 Munsique.

This morning going to work at a place, or in a region, called  
 "La Palma". A little mountain or foothill on the southern flank  
 of Munsique itself.

Arrive 5:15 am. Pitch black! Finally starts to get light  
 5:45 am. Heavy cloud. Occasional drops of rain. Warm. Little or no  
 wind.

We seem to be on western side of mountain, more or less. Diff  
 icult to tell exactly because of cloud. Probably SW. Altitude is  
 8350 ft, 2540 m.

A variety of miscellaneous bird sounds begin ca. 5:48.  
 Several birds uttering what may be DC. Hoarse "Iscoo"  
 notes. Uttered in rapid succession for long periods of time in indeterm  
 inate series.

Vegetation around here might be described as "mature  
 -looking scrub". Very thick. Not very tall.

Aud from birds uttering DC, everything quiet 6:00 am



Then more variety of sounds in distance. But it certainly does not sound like the breeding season here (either).

Yellowface songs in distance 6:03. Overlapping "DC", but nothing else.

One individual uttering "DC" does aerial display. Flies up and then plunges down. Uttering unusually loud "DC" Notes at an accelerated rhythm. Again. 6:08 a.m.

Then see something which might be "Tuck-like Tanager" (FLT). Silent and alone. 2 ft up in scrub.

"DC" finally stops 6:13 a.m.

A pair of birds flies by alone. Apparently Blue-ish tanagers.

Then see Arremonops of some sort flitting rapidly through scrub.

More Yellowface songs in distance. NO DWA.

6:20 a.m. A little bit down path. Edge scrub and pasture.

See single Chlorospingus semifuscus. At first rather low in scrub. Uttering "Tut" Notes. "CN"s? Then perches 10 ft up in scrub. Begins to utter DC. Lots of slightly hoarse "Tseeoo" Notes. Uttered in very regular rhythm for long periods of time in indeterminate series. Bird sitting in ordinary unritualized posture. Every once in a while, rhythm of notes accelerates. Then they suddenly turn into R. Rhythm of R accelerating. R Notes also progressively descending in pitch. But all R Notes are relatively clear (i.e. not hoarse). Each individual R Note might be transcribed by something like "Chuk".

Possibly semifuscus were the birds uttering "DC" earlier this morning.

In any case, this particular semifuscus would appear to be in breeding condition now!



3 6:35 a.m. Light rain. Then see a pair of Blue & Orange Tanagers 18 ft up in trees, only 30 ft from where semi focus is continuing. DC silent. Then see pair of Yellowbellies in trees 100 ft up hill. Bet ween the Blues & Oranges and the Yellowbellies is a tree with a Paniflora vine draped over it. Lots of lavender pink flowers. There is a single White-throated Hummingbird feeding on flowers. Then a single Black Delfonia appears in vine near White-throat. Then all birds disappear.

I don't know if this group should be considered a mixed flock or not! If it was a mixed flock, it was very diffuse.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

17:06 a.m. Same area. Hear Dubusia songs not far away.

17 Also Parulenterus and/or Hemiprocus-type Rattles and Howlers  
10 Then a group of 3 PL Atlapetes appears. In distance. Moving gradually in direction of Dubusia and presumed Parulenterus and/or  
13 Hemiprocus (all of which fall silent at about same time). There also are 2 Yellowbellies associated with this PL group. All moving 10-20 ft up in scrub. All fairly quiet. Group as a whole very coherent. PL's definitely in lead. Yellowbellies f ———> PL's repeatedly.

Group passes out of sight. Still moving same direction. Then, approximately 2 minutes later, a single Squirrel appears! On ground. Moving steadily in same direction as PL-Yellowbelly group! Apparently following! Squirrel seems to be usual species. Generally dull medium brown. Some russet on under parts and tail. Then the squirrel sees me and retreats. Silent throughout.

Rain stopped 17:15 a.m.



✓  
7:25. C. semifuscus still continuing DC and R's same general area. Apparently it did not join mixed flock when the latter passed through. (Incidentally, the semifuscus continued vocalizing throughout the Dubusia and Hemispraguei - Basileuterus-type vocalizations. Complete overlap.)

Everything very quiet 7:32 a.m.

Then I go for quite a long walk along path. Quickly reach area of tall "upper subtropical" forest and continue through it. Don't see any birds. And hear only a few. The forest in this whole region appears to contain many fewer birds than the edges. Only to be expected, I suppose.

Back region "mature-looking" scrub- 8:10 a.m. Near Dubusia singing downhill.

Sun coming out 8:17

A few more Yellowface songs in distance 8:30. NODWA

14  
Then see single "Brown" Piprula. Presumably ♀ or young - green head. Silent alone. 10ft up in short trees

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

This afternoon, going to work where first "Glauc", Albi-  
scan interactions, and mixed flock including Slate-throats and Sooty  
Thrushes were seen a couple of months ago.

Arrive 2:30 p.m. Cloudy. Warm. Occasional wind. Everything very quiet.

2:35. See single Sooty Thrush. Silent & alone. 4ft up in tree

2:42 See single Slate-throat apparently alone. In trees and fresh

6 93  
es 5-30ft up. Uttering a lot of "CN"s. Then I see that there are 2 Slate-  
throats around. One adult, one juv. Juv. fed by adult at least once. Bo



the birds flitting about quite active. Sometimes together, sometimes apart. Apparently getting insects only by flycatching. Then a ♂ Allie (definite identification) appears 6 ft up in dense bush. Right under tall tree in which Slate-throats happen to be at the time. Allie silent. Obviously by "crouching." Disappears almost immediately. Then a single slimmer. 95 → Slate-throats. Allie disappears almost immediately.

94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963



101

1, 1 Tree creeper, and 1 juv. Slate throat Blue & Black definitely in lead. Slate-throat definitely in rear. Group as a whole quiet but coherent. Making steady progress up hill. Blues & Blacks ranging 10-20 ft up. Eating small fruits. Both flycatchers at similar elevations, flycatcher clinging. Tree creeper & Slate throat ranging 6-15 ft up. Tree creeper on trunk of larger trees. Slate-throat in scrub.

Incidentally, fog is beginning to come into here now.

4:45 p.m. A few hundred yards away. 17960 ft. See another small mixed flock in part of forest where trees are taller. Includes at least 4 Blues & Blacks (1 juv) and 1 xanthocephala. All in tree tops 20-30 ft up. Young. Blues & Blacks fighting among themselves. Blues & Blacks definitely in lead. Eating buds and small fruits. xanthocephala may not stay with group very long. 5:00 p.m. Still watching same group. Actually there must be 6-8 Blues & Blacks in group. And now they are ranging 10-30 ft up. And xanthocephala is still with group. Keeping relatively high. xanthocephala f —————> Blues & Blacks. Group quite coherent, but not making very rapid progress.

Going on myself. 5:03 p.m. Reach finca 5:15 p.m.

August 11, 1965  
Munichique

Going to work same place today as yesterday morning.  
SEE TODAY'S NOTES ON MIXED DIGLOSSINI

#### COMMENTS:

It seems likely that the Blues & Blacks were the "original" nucleus of the mixed flocks seen early this morning.







have sometimes seen it. Everything quiet

Going down road into foggy side.

2:52. Fox nagle Hummingbird feeding on clusters yellow  
ink-white flowers in bush side road 5-10 ft up. Silent. Alone.

3:05. Swifter down road, a single Sooty Thrush flies by above  
126 flies into scrub. There seems to be some sort of a mixed flock here. 3 or  
4 of the dull brown Squalorix-type Hummingbirds (same species seen on  
Guanchique a couple of days ago). Moving very low then second growth  
edge road. 3" - 2' up. Also 1 Yellowface 10 ft up in nearby tree. Birds  
127 quiet. A single White-throated Hummingbird j. → Squalorix-type  
j. Then flies off. Then Yellowface (and thrush) disappear; while Squalorix  
types continue on their way. (This area is 8150 ft)

Then follow group of dull Brown Synallaxis-types down road;  
and find that they really are the tail-end of a large mixed flock. Among  
the other birds of the flock are 2 Yellowfaces, at least 1 Whitetrumpet, 2 Sittes,  
2 GT's, at least 1 Cnemoscopus, 1 juv. Thlypopsis (I don't know the  
species - all I could see was orange head, with dusky crown and olive  
back), 1 Ensifera, 1 Eupidonax type flycatcher, and various tree-creep  
ers. All moving in light fog thru very mixed, not too dense, obviously  
rather young second-growth. The Synallaxis-types, the Thlypopsis,  
the Whitetrumpet, and the Sittes always remain very low, 1' - 3' up. All ap-  
parently feeding on insects, on leaves and twigs. The Ensifera, Eupidonax-  
type flycatcher, Yellowfaces, and Cnemoscopus all seen 10-20 ft up. Tree  
creepers ca. 10 ft up. GT's ranged from high to low, 1' - 20' up.  
Group as a whole very coherent. But lead changes constantly. GT in lead  
at least once. Eupidonax-type flycatcher in lead at least once. Sittes  
in lead at least once. Rather surprising; group as a whole very quiet.



149 Beg. to crest of road 4:25 pm. Tag in parties here now. See  
pair of Blue & Blacks feeding on small berries in trees one side of road  
6-15 ft up. Then the Blue & Blacks fly across road  $\rightarrow$  mixed  
flock. Latter includes 1 Infuscula, 1 Yellow-face, 1 Cy, 1 H. atris  
puleus. All hanging quite low in second growth scrub, 1-10 ft up.  
Cy averaging particularly low. Blue & Blacks land in small tree 15  
ft up. Group probably also includes some tanager types in taller trees fu-  
rther away, but I can't identify them. Group as a whole very quiet;  
but also very coherent — moves off into forest quite rapidly.

It is my impression that "CN"s are less common today, when fog is relatively light and patch-y, than they were a few days ago, in the same place and at the same time, when fog was thicker. Presumably birds are relying on visual contact rather than auditory, now. I & they don't vocalize any more than they "have to". This, in turn, would suggest that the noise in noisy flocks is an unfortunate byproduct. It may be useful, on the whole, for a bird to vocalize, and vocalization may be provoked by companions in flocks, but, in flocks, the vocalizations probably are not always useful.

Certainly, it does seem to be true that mixed flocks are noisier, on the average, during the breeding season of most of the constituent species, than during the non-breeding season.

A few minutes later, and a few yards down road, see another single sooty Thrush alone.

5:07 p.m. Much further down road. Come across another mixed flock in region of young, stunted but low, second growth. Group includes at least 1 rufinucha, 1 atricapillus, 1 <sup>3</sup>Yellow face, 1 <sup>4</sup>tree creeper, <sup>56</sup>others. All birds seen ranging 5-10 ft up. Group quiet but coherent. rufus



ulha will lead at least part of the time

Reach Finca 5:30 pm

COMMENT: Just in case some of my preceding notes are not clear.... Most species of birds certainly are not breeding anywhere around here now. But a few others, e.g. Chlorospingus semi fuscus, Atlapetes spp., and Coer, may be in reproductive condition now

August 12, 1965  
Mundulque

Going to work on top of Mundulque trail again today. Arrive 5:38 am. Just getting light. Partly cloudy. Very windy. And unbelievably cold!!!

First thrush sounds 5:47. Otherwise everything very quiet. Then a variety of bird sounds ca 5:53. But the volume is not very great. No sign of Diglossa song as yet.

Some White bearded Flycatcher song in distance ca 6:01

Sun coming out ca 6:15 am. Going down to USE zone 6:25.

19 6:30. See pair of Yellowbellies 20-40 ft up in trees. Feeding on white berries. Noisy. But alone (so far).

6:47. Hear some Hemispingus-type sounds low in scrub, without being able to see the birds.

It certainly would appear that mixed flocks usually are formed rather late in the morning around here now!

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

104 7:15 am. Back up in region "alpine scrub" ("AS") See single Yellowbelly 6 ft up in tree. It sounds as if there probably are other birds



reds of other species associated with the Yellowbelly.

70 7:55 Going down footpath on western slope of mountain, just below Police Station (I have never been here before). See single Yellowbelly Definitely alone. 2 ft up in very thick AS. Feeding on small fruits.

It is turning very warm now 8:30 am. Sun shining brightly. Wind weaker than before. Going back along usual path.

8:50. Finally a large mixed flock. In one of the usual places. Range on of some mixed second growth with a few rather scattered tall mature trees. Group includes at least 3 Cnemidopus (probably more - 5 or 6), 2 GT's, at least 1 Yellowbelly, 2 Blue & Oranges, at least 1 Whitetripe, 1 A and 1 ♀ WCC, at least 1 Litta, 1 Cy, 1 Whitebeard, at least 1 Atlapetes torquatus (!), several woodcreepers. Cnemidopus, WCC's, Whitebeard, Cy, and Yellowbelly only seen high in trees, 20-30 ft up. Woodcreepers probably have similar range. Whitetripe and A. torquatus only seen low in shrub, 6" - 1' up. GT's, Blue & Oranges, Litta ranging all levels 4-30 ft up.

Group as a whole coherent. Noisy. Lots of "CN"s. Cy also sings repeatedly. Phrases after phrases. All or most with "Tut" Intro Notes. NODWA. Cnemidopus apparently in lead most of the time. But Whitebeard, GT's, Litta, also in lead, occasionally, for brief periods of time.

GT's certainly eating fruits. Coccyzus spp. certainly insects.

The Cnemidopus fight among themselves (as usual).

WCC Litta Cy The WCC's and the Litta(s) are not associating particularly closely with one another. But the WCC's are usually or always further behind in the flock than the Litta(s). Neither Coccyzus spp. shows any obvious tendency to associate with Cy.

Blue & Oranges frequently form the rear guard.



Group eventually moves down hill, further into VSF.

*N* At one time, a single Big Butorapus flew over the flock. But apparently did not join it.

*Albi* *N* At another time, a single *Albi* appeared out of low scrub, 20-30 ft away from flock. Silent and alone. Then hops up into tall trees and bushes, still same distance from flock. Possibly feeds on clusters yellow flowers, same species favored by *Albi*s and *VB*'s at Finca "Canaan". Then flies away into distant scrub. Although this bird made no overt attempt to join the flock, I think its original emergence from scrub must be considered an "intention movement" of escorting.

Cloud coming up 9:20 a.m.

*Ho* *134* Same flock back 9:30 a.m. Now going rapidly uphill. Now we that it includes ca. 30 birds. Including one Big Butorapus (who does seem to have joined!) 20-25 ft up in trees; 3 PL *Atlapetes*, ranging from ground level to 2 ft up; several *Whitobupis*, remaining low in scrub; and a larger variety of *feruariids*, including 3 or 4 of the dull brown *Synallaxis*-types.

No birds seen earlier are behaving much as before.

Big Butorapus definitely in lead! Followed by *GT*'s. Followed by *Cnemidopus*, followed by the rest.

*Atlapetes torquatus* still definitely with flock. (I guess the species must be allopatric here). Definitely bringing up the rear. But not associating particularly closely with *PL*'s!!!

*Albi* *VB* After most of flock has passed, single *Albi* appears, low fly, 2 ft up in scrub, 10 ft away from nearest member of flock. Quite silent. This is certainly same *Albi* seen escorting a few minutes ago. Note: the members of flock nearest to the *Albi* were not other *Albi*.



coming.)

9:45. Now hear Dubonia singing up hill, just where I can also hear (other) members of flock. So Dubonia must be associated too.  
Leaving 10:06 a.m.

August 13, 1965  
Region of Uribe

Reach the highest point on the highway (way past the town of Uribe) 5:42 a.m. 8400 ft 2550 m. This area is facing more or less due West. Clear. Fairly warm. Everything quiet when we arrive.

5:50. Some throat sounds. Then the same "DC" as at "La Palma". Then quite a variety of miscellaneous bird sounds.

This is area of mixed second growth and USF.

Start Yellowface songs 6:02 a.m. NODWA. Again & Again. All NODWA. But bird noise in general quite loud and varied. 6:07. All or most "DC" stopped. But Chlorospingus remifuscus has begun its DC and R's.

6:08. See single Big Buttercup. Silent and alone. 5-8 ft up in bamboo scrub (uh!) under mature trees.

There are lots of birds here. But mostly keeping under cover. More Yellowface songs. NODWA. Then Yellowface shuts up. Then I hear a few Antapetes Whistle songs. NODWA. Then Antapetes shut up. Then Yellowface(s) begin again. NODWA.

6:22. See single dull brown Synallaxis-type. Silent. Apparently alone. 6" up in scrub.

Everything much quieter by 6:25 a.m.



More Atlapetes Whistle songs. NODWA.

6:28. See pair of Atlapetes, 2-3 ft up, in low but lush second growth edge slide. Very noisy. Lots of quieting "chatter". But apparently alone. Can also hear another pair of PL's 100 yds away across road. Probably also in low second growth.

Then hear Dubuna singing down hill.

6:35 a.m. See single Yellowbelly, silent & alone, feeding 3-4 ft up in second growth scrub. A few feet further on, see 2 Yellowbellies in tree, 15 ft up (one of these certainly is bird seen earlier). Also 2 PL's (probably also seen earlier) in same tree. Both Yellowbellies fly away long distance, across road. 1 PL f ———> Yellowbelly. But only half way. Lands in scrub. Then returns the other way. (Probably I frightened this bird).

Then walk along ridge between East and West slopes.

Hear more Yellowface songs NODWA.

6:50. Come to "grove" of tall mature trees. There are several birds moving about in tree-tops. Not close together, but this looks as if the birds might be "preparing" to form flock. Can't identify any of them by sight. But I am sure that there is at least one Yellowface among them. Singing NODWA. Then a pair of cyanocephala flies out of low bamboo scrub across road. Into trees where other birds are. This must be considered a case of cyanocephalas f ———> group. Then Dubuna f ———> cyanocephala. Dispute. But Dubuna starts to scrub. 5-12 ft up. Sings. Overlapping Yellowfaces. A single Black Diglossa (unidentified, but presumably ♂ Albi) appears very briefly in scrub, only a few feet from Dubuna. Obviously exerting. Silent. Flies off immediately. Then a pair of rufinuchas f ———> group. Very



many "Greetings" Ranging 10-20 ft up in trees. Then I lose sight of group.

Clouds coming up 7:05 a.m.

Then catch brief glimpse same pair rufinuchas. 3 ft up in scrub. Can't tell if they are associating with other birds now or not. I think they are alone.

7:21 a.m. See single Hummingbird feeding white flowers low second growth scrub. Alone and alone.

7:25 a.m. See group 2 adult and 2 juv. rufinuchas. In low second growth scrub. There also are 2 or more dull brown Synallaxis types in same scrub. rufinuchas ranging 1-6 ft up. Synallaxis-types from 6" to 3 ft up. rufinuchas j → Synallaxis types. Then Synallaxis-types f → rufinuchas. Then rufinuchas fly across road. Synallaxis-types do not follow.

Now Yellowface song 7:37. NODWA

See single Agelaius (real) alone.

7:44. See 2 Yellowbellies and at least 1 PL Atlapetes, close together, 30 ft up in trees in VSE. Feeding in tangle of vines. Quiet. Yellowbelly j → PL. Then one Yellowbelly repeatedly supplants the other. Obviously hostile. Can also hear Yellowface singing not far away. NODWA. But I am not sure that this Yellowface really is part of mixed flock.

7:58. Some distance down road. Come across mixed flock which maybe partly same group. Now includes 2 Yellowbellies, 2 Blue & Black, 2 Yellowfaces. All 10-25 ft up in trees VSE. Group probably also includes 2 PL's, but I never get a good look at them. Certainly, a single White-throated Hummingbird "meets" group briefly. Group as a whole noisy. Very coherent.



8:10 a.m. See single Cy, about 50 yds from where mixed flock seems to have gone. Very low in second growth scrub 6" - 2 ft up. Silent. Apparently not associating with group. (But I certainly am not sure of this!) Then see Cy 30 ft up in mature tree. Another area, but still about 50 yards away from group. Cy sings repeatedly. Long rapid Twitter with "Trit" Intro Notes. NODWA. Then Cy flies away. Cy j → group in scrub!

The group is now back to slope facing West.

Incidentally, I can see white *Cecropias* just a little way down this slope. Further proof of humidity - if any is needed!

Everything dead silent 8:28 a.m.

Then go down road a considerable distance. Near Dubuna singing up hill 8:40. Go a little further down road (8250 ft) and see a very large mixed flock. Group includes the Dubuna, 2 Blue & Oranges, 2 Sittes, 1 Cy, 2 Yellowfaces, at least 1 PL Atlapetes, at least 1 Finch-like Tanager (definite - get good view - gray and black striped head, chestnut breast), others. Also 1 Squirrel (usual species, brown & russet).

Group quite coherent. Panning thru all sorts of scrub, including bamboo, and more or less small trees scattered thru scrub.

Finch-like Tanager only seen low, 1 ft up. PL seen 2-6 ft up. Dubuna & Cy 2-10 ft up. Yellowfaces 6-20 ft up. Sittes 10-20 ft up. Blue & Oranges 2-20 ft up. Squirrel from ground to 15 ft up.

Difficult to tell who, if anyone, was in lead. Probably the Blue & Oranges at least part of the time. Finch-like Tanager seen only at rear. Dubuna usually toward rear.

Group as a whole moderately noisy. Lots of "CW"s. Dubuna continues to sing for only a few seconds. But then some Diglossini begin



us to sing. Phrase after phrase. At first rather Cack-like. Beginning with "Zee zee zee..." followed by Twitter. But then became more typically Cy-like. I think that all these phrases probably were uttered by Cy (I know Cy was present - I saw it clearly). Haven't I heard Cys utter phrases beginning with "Zee zee..." somewhere else in the northern Andes (Paríamo de Guasca, for example)???

Squirrel j  $\longrightarrow$  Dubiuma. Then squirrel follows a path gradually diverging from that of flock  $\longrightarrow$  Until, eventually, it seems to have become completely separated from the flock.

A few seconds after flock has disappeared, uphill, another Cy appears. Coming from downhill, but going steadily in direction in which flock disappeared. Utters "CN"s. As it happens, the path of this Cy passes close to the Squirrel. But it appeared to pay no attention to the latter.

9:40 a.m. Back to first site. See single Yellowbelly alone 20 ft up in massive VSF tree edge rock slide. Silent and alone.

Sun out again. Hot and still.

Leaving 10:07 a.m.

COMMENT: It would appear that the birds here are behaving in exactly the same way as the birds on and near Munchique. The whole of the southern part of the Western Cordillera (Munchique, Urubé, and the Farallones) would appear to be essentially uniform!



Mumukshu Apr - May 1963

May 1, 2, 3  
4, 5, 6, 7

No Birds Seen Alone

|||||  
|||||

(99)

No Birds in Flocks


(160)

(259)

41.78%

No Flocks Seen

|||||

No Eggs per Flock

7	2
2	4
3	6
4	11
13	7
2	3
4	
2	
3	
3	
2	
3	
2	
7	
6	
	96

No H.O. Flocks Seen

|||||

Largest No. Birds 1 Flock

7, 9, 18, 18



May 1	=	4 hrs	30 min
May 2	=	3 hrs	45 min
May 3	=	4 hrs	15 min
May 4	=	5 hrs	45 min
May 5	=	4 hrs	45 min
May 6	=	4 hrs	00 min
May 7	=	2 hrs	15 min

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TOTAL = 29 hrs 15 min



Western Cordillera  
 Lehmann's Finch ~~Parula~~  
 April - May 1965 Hot Garden  
 Healthy & m

Apr. 30,  
 May 1, 2, 3, 4,  
 5, 6

No. Inds. Seen Alone

|||||

(24)

No Inds. in Flocks


(141)

(167)

84.43% !

No Flocks seen

|||||

No spp. per flock

13 ?  
 4  
 8  
 7  
 10

42

No H.O. Flocks seen

|||||

4  
 7  
 4  
 3  
 6  
 4  
 7  
 5  
 4

44

Largest No. Inds in 1 Flock

20?, 20

86



Apr. 30 = 5 hrs 15 min M

May 1 = 1 hr 45 min M

May 2 = 3 hrs 15 min M

May 3 = 3 hrs 30 min M

May 4 = 2 hrs 45 min M

May 5 = 3 hrs 00 min M

May 6 = 1 hr 00 min M

21 86

23 121

23 141

26 141

---

20 hrs 30 min



Western Cordillera - Farallones  
May, 1965

May 26, 27,  
28, 29

No Inds Seen Alone

|||||

1

(31)

(252)

179.46%

No Inds in Flocks

|||||

1

(201)

No Flocks Seen

|||||

(22)

No H.O. Flocks Seen

|||||

(15)

Largest No. Inds in 1 Flock

7, 5, 4, 11, 16, 20

No Inds per Flock

6 13

5 8

3 3

17 2

4 9

9 8

5 10

3

2

11

9

2

17

4

2

132



May 26 = 2 hrs 30 min

May 27 = 17 hrs 15 min

May 28 = 17 hrs 00 min

May 29 = 2 hrs 45 min

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17 hrs 30 min



Munchique - Aug 1965

Aug 14, 25, 29,  
12

No Inds seen alone

|||||

(27)

No. Inds in Flocks


|||||

(154)

85.08%

(151)

No Flocks seen

|||||

No. Inds per Flock

8

19

3

11

7

3

5

3

3

11

13

30

27

24

No. H.O. Flocks seen

|||||

Largest No. Inds 1 Flock

13, 31, 20, 22

86



Aug 7 = 5 hrs 20 min  
Aug 8 = 4 hrs 30 min  
Aug 9 = 4 hrs 15 min  
Aug 12 = 4 hrs 15 min

---

TOTAL 18 hrs 00 min



La Palma - Aug 1965

Aug 13/11

No Inds seen alone

|||||

(30)

No Inds in flocks

|||||

(47)

(171)

61.04 % !

No flocks seen

||||

No lpp. or flocks

5

4

2

10

4

---

25

No H.O. seen

||||

Largest No. Inds 1 flock

5, 20



Aug 10 = 3 hrs 15 min

Aug 11 = 4 hrs 00 min

TOTAL 7 hrs 15 min



La Cuyquiterana - August 1963 Aug 7, 8, 9, 10, 11

No Inds. Seen Alone

|||||

(4)

(162)

96.29%

No Inds. Seen in Flocks


(156)

No. Sp. per Flock

No. Flocks Seen

|||||

7  
5  
10  
4  
8

109

No. H.O. Flocks Seen

|||||

10  
15  
4

40

Largest No. Inds. 1 Flock

7, 9, 12, 15, 21

3  
6  
2  
5  
7  
12  
5  
6

36



Aug 7 = 4 hrs 00 min  
Aug 8 = 2 hrs 15 min  
Aug 9 = 2 hrs 30 min  
Aug 10 = 2 hrs 30 min  
Aug 11 = 3 hrs 15 min

---

TOTAL = 14 hrs 30 min



May 8, 1965  
Region of Purace

Going up past Purace. Along road to Moropan, Muna, Bogota, etc.  
Arrive just 5:20 a.m. 3180 m. 10,293 ft. Still too dark to see.

5:33 Beginning to see a little. There is relatively small area alpine scrub along stream. The weather is cloudy, and there is a very light sprinkle of rain. First bird notes heard 5:38. Andean Sparrow. Also thrushes. Sound like the usual Scotter.

5:50 a.m. Go on to another area, 3210 m., where there are hedge-like patches alpine scrub between road and pastures. Everything very quiet, altho I hear "CN" like sounds from time to time.

Today at least, this area looks a lot more humid than Munchique.  
6:12 a.m. See a single Sooty Thrush alone. Bright eye ring.  
There are lots of the cup-shaped dark red flowers favored by Lays in the Eastern Cordillera around here.

A slight increase in bird notes 6:20. Hear what are either Laf song or Laf-like phrases. *White-throats*

6:23. See pair PR *Atlapetes* moving low in hedge. Uttering "beet" notes and one burst twitter "Que ting." Definitely alone.

6:31 See what seems to be North American Water Thrush in edge of scrub. Alone.

There are several kinds of hummingbirds here. Small green and large brown. But apparently no Seals.

6:36. Hear definite Laf song. Prolonged and indeterminate. By bird Golden Eagle clump bushes in "hedge".



Back to forest at 6:48. Weather as before, except that rain seems to be increasing gradually. (It is in large measure a downpour - yet).

See more hummingbirds and a single Sooty Thrush. All alone. See several more Sooty Thrushes alone. In patches low scrub in pasture.

Still more hummingbirds and thrushes alone 7:04 a.m. Rain starting to let up now.

Now 7:15, almost completely stopped. There is, perhaps, a very slight increase in the faint bird noises around here, but not much!

Catch occasional glimpses birds, singles and pairs, in scrub, without being able to identify them. I.E. there probably are plenty of birds here. It is just that they are remaining hidden.

After?

Hear some phrases which may be other songs without R's. 7:28 Going uphill. 7:36. Reach point just below tall, obviously mature forest. 3250 m. 10,550 ft. Still nothing much visible except hummingbirds. This is rather reminiscent of the Quito region on a bad day.

Incidentally, the forest here also looks like what I have been calling "upper subtropical". But it obviously must be the kind called temperate by others. It is just that its "physiognomy" does not look very different from upper (or lower) subtropical.

fx

7:45. Hear Laf Long in second growth scrub below forest. Or is this Whitestart?

7:50. Starting downhill again. Now there is definitely an outburst of miscellaneous bird songs.

H

See a couple of White-headed Flycatchers alone. High in tall mature trees standing isolated in midst of low scrub. 40 ft up. None but alone.



8:00 a.m. 3225 m. See mixed flock. In tree, probably second growth, 20-25 ft up. See warmest thick low second growth scrub. When first seen, there are 2 or 3 Pseudospingus verticalis, 2 Junco (1), and 1 Geothlypis in this tree. All within 10 ft of one another. Then I see there is also 1 Yellow-rumped Warbler. All fairly quiet. Some "CN"s. Then the Pseudospingus fly into a tree 40 ft away. A mature tree standing isolated in scrub. They apparently are not followed by Junco, Geothlypis, or Warbler. Then the Pseudospingus feed in the mature tree 30-40 ft up. Quiet. And now I see there are 2 Cys (definite) with them. One Cy apparently juv (dull blue in color, but with apparently complete mark). Difficult to say who is leading whom. Cys silent or uttering only "CN" type notes. A single White-bearded Flycatcher group. But then disappears immediately. Then the Pseudospingus fly back to first tree. Can't see if they are accompanied by Cys or not. By this time the Junco, Geothlypis, and Warbler seem to have disappeared. I have also lost sight of Cys. Pseudospingus remain visible for a while, then I also lose sight of them. This flock certainly did not appear to be very coherent. And it certainly did not make progress in any given direction during the period it was under observation.

Momentarily, just about the time the flock "melted away", the rain started again, gently.

Going on downhill, see several (now) Geothlypis flaviceps and White-bearded Flycatchers alone.

CORRECTION: At least one of the White-beards definitely associated with mixed flock. Come across flock 8:45 a.m. Go thru clumps second growth scrub and small trees in pasture. Obviously partly same group seen earlier. Group (now) includes, 1 Whitebeard, 2 Junco, 3 Butor, at least



Ag (adult) Apparently no Pseudosyrnium. B. erinus definitely in lead. Two  
bellies definitely singing up near. No White head form and follows repeatedly  
seems to be particularly attracted to the erinus! White head occasionally rides  
g. Ag sings repeatedly. Long twitters. Can't tell if they have Intro Notes  
or not. There also are a lot of hummingbirds around near the flock, but  
they don't seem to be integral members of it. The most common species is the  
"Cinnamon" one - which is all over the place everywhere here.

There was relatively little rain during the period this flock was observed. But now it is coming down harder again 9:07 a.m.

9:12. Downy road. See single *Kaf* (definite) alone. Feeding red and white flowers edge mixed growth scrub. I have seen *Kaf* feed same species elsewhere in Andes. This bird 4-10 ft above ground. Once, one of the local Cinnamon Hummingbirds flew straight toward the *Kaf*. I thought this was going to develop into an attack. But then the Cinnamon perched on a branch, only 2 or 3 ft from the *Kaf* without any (further) sign of hostility.

9:30. A little further down by road. Hear a pair of PR's from very low scattered scrub. Only 1-2 ft above ground. They fly down hill into small trees and tall bushes along stream. Perch and feed 10-15 ft above ground. Hear "Tut" Notes and Twitter "Greetings". Then I see pair Yellow-bellies fly into same clump trees and bushes. Land about 20 ft away from PR's. But then the 2 species gradually work their way closer together, by small hops. I think this should be classed as a joining attempt by Yellow-bellies. Then a single Laf joins group! Both Laf and Yellow-bellies quiet. At least 4 times, during the next few minutes, one or both Yellow-bellies follow —→ PR! And once PR f —→ Laf! This is a very well integrated group, but it isn't going in any one particular direction very



fact. Incidentally, the rain is coming down quite hard during this whole period of observations.

This is the first time I have ever seen Yellow-bellies and Towhees near area. Is it significant that the Towhees were seen a few feet up hill from the Yellow-bellies??? Certainly, the two species were found in very similar vegetation.

Leaving 9:45 a.m.

*after?* On way down, on Road from Purace to Popayan, 9200 ft., region of drier looking second growth scrub, hear song phrases which are almost certainly uttered by Alter Towhees with sub-terminal R's. (The only other possibility is that these phrases were uttered by Barbs.)

COMMENT: It looks very much as if the degree of gregariousness here will be much the same as in the Eastern Cordillera. Or, possibly, intermediate between the Eastern and Western Cordilleras. Certainly not very much like Quito. This would seem to indicate that the "frontier hypothesis", by itself, is an inadequate explanation of all the variations in aggressiveness.

My observations this morning would suggest that bad weather, i.e. rain, has a depressing effect upon the formation of mixed flocks here.

NOTE: The whole Purace region (i.e. near the town of Purace itself) is on the western slope of the Central Cordillera. I.E. it probably gets as much rain as the eastern slope of the Western Cordillera. Certainly it is very humid.

I am becoming more and more convinced that such species as the Yellow-belly and the PR Atlapetes are confined to relatively humid environments.



(6)  
May 7, 1965  
Region of Puma

Arrive same place where most of the work done yesterday 5:30 a.m.  
Still fairly dark. Clear (altho it looks as if fog may come in soon) Cold  
Lots of Andean Sparrow song 5:35. Also some thrush noises. There  
some sub-oscines

First Altitudo Whistle song 5:45 a.m. Near where PR's seen yesterday.  
Only one or two phrases. No Raf song.

Certainly, our birds are not breeding here now.

Hummingbirds out feeding already 5:47

9 5:55. See 2 White-bearded Flycatchers. 6-10 ft up in second growth  
scrub. Apparently alone.

See single Thrush alone. And then another. And then 2 or 3 more!  
11 7:00 a.m. See same 2 White-bearded Flycatchers. Now, but alone.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

See another single sooty Thrush. In flight. Followed by Cinnamon!

13 7:13. Flying uphill from road. See plus Frabellies in clump down  
in fairly high scrub, on edge pasture 6-15 ft up. Now. Apparently alone (B  
ut I can hear Whistlers not far up hill.) Frabellies fly up in that direc  
tion.

8:12 a.m. There is no flock in area where Pseudospingus flock seen  
yesterday. Everything quiet here now.

Incidentally, I have seen lots more single sooty Thrushes alone here  
than are recorded in the preceding notes.

Seen starting to come out again 8:35



26 8:57. Slightly above road. See mixed flock. Includes 2 Firebellies, 1 Yellow-faced Whitestart (definitely same species as on Muncie), 1 juv. Cy. In scrub ~ 15 ft above ground. Whitestart j —————> Cy. Cy j —————> Firebelly. One Firebelly flies away, the other birds do not follow; at least not immediately.

9:17. Further down hill. See single Firebelly (one of the same individuals) in top small tree. At first alone. Then single Yellow-faced Whitestart j —————> Firebelly. Then Whitestart flies away. Firebelly j —————> Whitestart.

Slight rain starting 9:20 a.m.

30 See with and what may be juv. Aquinas go from bush to bush, in direction in which Firebelly and Whitestart went. Then, a few seconds later, see single Dulciana (definite) following same route in same direction.

Finally leave 10:20 a.m.

COMMENTS:

I. Mixed flocks certainly were much less common today than yesterday, in spite of the fact that the weather was no much better today than yesterday. This would suggest that here, as in the Western Cordillera, bad weather encourages the formation of mixed flocks. If so, why did I get the impression yesterday that the mixed flocks were most conspicuous, and probably larger, during slight, temporary, alleviations in the abominable weather? Possibly moderately bad weather is encouraging, while extremely bad weather is discouraging ???

II In general, the birds here, today and yesterday, would appear to be almost exactly intermediate between those of the Quetz region and those



e of the Eastern Cordillera (and/or the Western Cordillera?). But their behavior may be most like that of the birds of the Eastern Cordillera.

May 10, 1965  
Region of Purace

Arrive same place yesterday 5:45 a.m. Getting light. Cloudy, but no rain - yet. Andean Sparrows in full swing

Arrive general area where Allen and C seen yesterday 5:50 a.m.  
See some single sooty Thrushes alone. And then several more, both on ground, in grassy pasture, and in scrub.

Everything very, very quiet 6:40. Haven't even heard White-bear as this morning!

7:00. Blue Tanager appears. Moving thru trees and low scrub. Quite alone

16 Going up hill. 7:50. <sup>W</sup>Three Firebellies fly by. Definitely alone. Uttering "fret" notes.

17 Then see another Firebelly. Definitely different individual. In small tree further up hill. 20 ft above ground. Alone. (So there are at least four Firebellies in this area!)

19 8:25. See pair Firebellies (again). Alone. 15 ft up in tree. It is beginning to look as if the Firebellies here are less gregarious than in some other parts of the Andes. Apparently tending toward the condition of the Firebellies near Quito.

21 33 8:42. Again see pair Firebellies. <sup>W</sup>Going from bush to bush scattered scrub 6-10 ft above ground. Noisy. Apparently alone at first. Then



34 followed by some small olive-<sup>red</sup> bird (unidentified). Then alone again (Actually, I think this "olive-<sup>red</sup>" bird may have been a wren.)

22 9:02. See single White beard alone 25 ft up in isolated tree

38 + 40 9:04. Just as light rain starts. See mixed flock. Includes at least 2 Butorampus eximia, 1 Pseudospingus, 1 Yellowbelly. Eximias definitely in lead. Pseudospingus follows and joins them repeatedly. Yellowbelly also f ———→ group. Then Yellowbelly f ———→ Pseudospingus. Then eximias and Pseudospingus fly on. Yellowbelly does not follow.

23 A minute later see single Yellow-faced Whitethroat in another area alone. Low scrub. 3-4 ft up. Sings. Then silent.

(NOTE: Flock ranged thru low scrub, 6-15 ft above ground, also into tall trees, 20-30 ft up. All birds moving at approximately same levels.)

23 9:13. See two White beards alone. In low scattered scrub. 4-5 ft up. Fairly quiet.

Rain stopped 9:15. But it certainly seems to have brought a lot of birds up into visibility and activity!!! There also is a lot more in the way of bird song now than earlier.

Now flock moving back. And it seems to have grown by accretion! Now includes many more birds. I probably didn't see them all, but

40 I did note the following: the eximias as before, at least 2 Pseudospingus

45 at least 3 White beards, 2 Sittis (!). Flock moving thru region of very diverse vegetation. Scattered tall mature trees, with lots of epiphytes. Also scattered patches low scrub. All intermingled with open patches bare pasture. The eximias and the Pseudospingus stayed in the trees, 20-40 ft up. Pseudospingus picking insects off leaves. The White beards and the Sittis ranged thru both trees and low scrub 6-40 ft up. Sittis pick



ing insects off leaves both places. The flock was milling around in a rather confused fashion. Difficult to tell who was leading it. Certainly an erimias at one point. Possibly Sittis at another. Flock was joined by 2 adult Cys. Came at different times and left at different times, but their periods in flock certainly overlapped. They did not, however, associate closely with one another. Both Cys stayed in trees 20-30 ft above ground. Flock also joined by 1 Laf. Also in trees, 15-20 ft above ground. The Cys stayed with the flock for 2 or 3 minutes, each, then disappeared. The Laf. stayed for a minute or less. Incidentally, there was at least one Cy with the flock when the Laf. joined. Also associated with the flock, sort of on the rear outskirts, were a single CC and a single PR Atlapetes. Both in low scrub, 2-5 ft up. Both silent, and both disappeared soon. They were not, however, together (at least 20 ft apart from one another).

The different species of Diglossini in this flock showed absolutely no tendency to associate with one another. Nor did they show any hostility.

Flock as a whole was noisy. Cy(s) sang repeatedly. Long twitters. Some with Intro Notes, some apparently without. Erimias, Pseudospingus us, and Whiteheards uttered a variety of noises. Laf, like the CC and PR, was silent. Sittis uttered at least 1 "Greeting" Twitter.

Pseudospingus may be an obligate commensal like most Coucoros trium species.

I think it must be significant that there were no Firebellies with this flock. Although I know that there are at least 4 individuals of this species not too far away. Also significant that Yellow-belly did not continue to associate with the flock very long. Incidentally, the Yellow-belly, when it was with the flock, was a few feet higher, in altitude, than any Fire



hulls I have seen here - yet.)

WCC Why were there no WCC's with this flock? Is this altitude too high for them?

Very light rain started and then stopped again during this second period of observation of the flock.

Flock eventually goes down hill out of sight. Whole area quite quiet now, 9:55 (except for some thrush sounds downy hill)

10:07. Going down hill. Come across Whitebeard apparently alone in tree. Very noisy. 20 ft up.

Then see single wren in tree 20 ft away. Uttering lots of them, high formless twitters. This certainly is the species which has been uttering the peculiar twitters of this type around here which have been puzzling me (because I was afraid they were diglossini and I couldn't identify them).

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

COMMENT: This morning's observations would seem to confirm, more or less, what was seen on previous days. Mixed flocks here seem to be generally comparable to those in the Eastern Cordillera. (But) they are most highly developed in slightly or moderately bad weather. The important nuclear species are Butorhynchus evinnia and Pseudospingus. Possibly also White-bearded Flycatchers (they seem to join mixed flocks more frequently, and are more obviously active nuclear, here than in some other parts of the Andes.) The latter also are extremely important (passive nuclear or passive-active nuclear) whenever they are present. The two Poecilothraupis species, the other Diglossini, and the Yellow-faced Whitestart seem to be less important. (Perhaps some of these species are less important in mixed flocks here than in some



other parts of the Andes. Is it purely coincidental that there are also the species which extend to the Quito region ????) The role of *Dubusia* is dubious. Perhaps it is an active nuclear species or a regular attendant.

This afternoon working small patch second growth woodland just outside de Popayan 1730m 5700 ft. 3:50 pm.

See single *Scay* alone. Top tree, 25 ft up. Silent. This species does seem to be a commensal of man around here.

Quite a lot of BT's, flycatchers, and Goldfinches about *Scay* *Scayana*, which is either *cayana* or (more probably) *ruficapilla* a, joins → BT.

Unfortunately, it is raining now.

See a couple more *cayana* or *ruficapilla* alone. 20 ft up in tree. (They look greener, underneath, than the *cayana* I remember near Mérida, but perhaps they are not green enough to be *ruficapilla*.)

There are a lot of voices and/or quacklets around here, but I have yet to see an XCC. 4:10 pm.

4:25. Hear what might be *Cy* song in distance! First twitters with the "Int" Intro Notes. Bird in top tree, 30 ft up. See it fly away, but can't identify it.

4:31. See single PST alone. Silent.

Then see single Slate-throated Matedant. Silent and alone.

Then see what might be pair of *Bones* fluttering thru trees in distance.

Bird uttering "Cy-like" songs back again. Getting closer, I discover that they do not have Intro Notes. Each phrase might be transcribed as something like "Zee zee wee <sup>rrr</sup> in voozo". Could this be BG ??? (The no



tes which I mistook for Intros earlier: probably were uttered by nearby hummingbirds.) Now bird shuts up 4:40 p.m.

Now I definitely do see a couple of BG's in tree 40 ft away. Chasing one another. Also very near a group 3 cayana-ruficapilla. The two species apparently ignoring one another. BG's fly off. Tanager does not follow.

Then I hear song phrases, like one transcribed above, coming from direction in which BG's went. I am now sure that it is the BG's who are really uttering these phrases.

See small hummingbirds feeding in Eucalyptus-like flowers of tree ("Guava") in which BG is feeding. No sign of hostility between the hummingbirds and the BG (as far as I can see - which isn't a great deal).

All the phrases which I presume are by BG are single.

Rain stopped now. But light is atrocious!

Go on a little further. See 2 (more) BG's feeding on Guava flowers in just the same way that they would on Eucalyptus. Alone. Uttering "CN"s. 4:59. Actually it is a group of 3 birds feeding in this tree. And one of them looks suspiciously like a CC (altho I can't be absolutely sure in this light).

All feeding within a foot or so of one another, without overt hostility.

See single ♀ Blue-capped Euphonia alone, small orange tree, 6 ft up. Single cayana-ruficapilla perched top bare tree. 30 ft up. A pair of BG's j ———→ tanager. Tanager flies off. BG's f ———→ tanager. Perhaps the BG's really are gregarious here???

See some more BT's alone.

Then see couple BG's alone in low scrub (blackberry tangles). There really are a lot of BG's here. Probably as many as in Merida.

Leaving 5:15 p.m.



May 11, 1965  
Region of Purace'

Arrive same place as yesterday morning 8:37 a.m. Just starting to get light. Sky approximately  $\frac{3}{4}$  overcast. Cold.

Audubon Sparrows singing, Sooty Thrushes uttering a variety of notes as usual

Have had several observations groups 2 or 3 Whitestarts alone (see Dyer's Notes) In trees and scrub. Hearing songs and SHN's (sharp "T" or "I" notes).

Then, 6:21 a.m., see single Dulania alone. Perched top isolated, partly broken, mature tree. 25 ft up. Kicks off immediately.

See single Sooty Thrush alone.

See single Sooty Thrush chasing montane cotinga (usual species) in flight. Then Sooty accelerates. May actually attack cotinga. Then 2 birds separate. Land in same tall isolated tree, 35-40 ft up, 20 ft apart. Both seem to relax. 6:36.

Then see single Fimbrellus moving rapidly thru large area low scrub. Only a few ft above ground. Silent. Definitely alone.

They are pair Fimbrellus in low tree. 20 ft above ground. There also is

single Sooty Thrush in this tree. Single Attila  $\rightarrow$  Fimbrellus. The

flies away. Nothing follows. Sooty moves over nearer to Fimbrellus. Finally only 1 ft away from them. Then Sooty flies off. Fimbrellus do not follow.

Then Fimbrellus fly off in different direction

7:25. Hear Dulania singing uphill. Going uphill myself for our Sooty Thrush chasing another. Alone.



Then see single Towhees and single Song Sparrows about 4 ft apart in small tree (same tree where the two species were seen together earlier). Both silent. Towhee flies off. Sparrow does not follow.

34 Then see single Towhee. Definitely alone. Feeding. 40 ft up in tall, sparse isolated tree edge pasture. Flies off into low scrub.

36 Then see pair Towhees alone, small trees, 10 ft up. Quiet.

37 Some distance away, see Yellowbelly fly over area mixed pasture and very low scattered scrub. Flying low.

17:50. See Towhee alone feeding in low scrub. 2-3 ft above ground.

In pasture common.

Some CR & Miff.



Proportions more or less correct  
Very fresh-like

See more single Song Sparrows alone.

It is clouding over now 17:55 a.m. Fog appearing in distance. Wind also increasing a little.

38 Again catch brief glimpse Towhee 2 ft up low scattered scrub. Silent. Definitely alone. Obviously same individual seen before.

Fog coming in 8:15 a.m. Still very thin.

A thought has just struck me. I have not seen or heard White-eared flycatchers here this morning yet. Does this mean that they are away, travelling with some mixed flock elsewhere?

Everything has suddenly turned very quiet - now that fog is coming in. The fog here certainly does not seem to have stimulated either vocalizing



ation or activity

Up edge tall forest 9:00 am. Nothing visible or audible.

Going down hill 9:06. Rain starting.

Heard ~~leaf~~ ~~hopping~~ in scrub right up at edge tall forest.

31

9:28. See single Scrubbelly (again) Departing alone. 6 ft up in moderately tall, thick scrub. This is very close to where Blue & Orange seen earlier this morning. Scrubbelly just sitting quietly, about 1 ft under "canopy" of scrub. Trying to keep out of the rain?

COMMENT. It is possible that the Dubusia (s) here is (are) comparable to some others of the local species. I.E. less gregarious here than in some other parts of the Andes. "On its way" to becoming non-gregarious, as in the Quito region.

Working same place this afternoon as yesterday afternoon. Arrive 3:05 pm. Hot and "awful". Looks like storm coming up. Everything quiet.

Lots of Goldfinches around. Apparently same species as in Chiriqui.

3:18. See a single Hate-throated Whitestart alone. Flying low in scrub. Silent. 1-6 ft above ground. Then, in fact, I see that there is really a pair of the birds here.

3:28. See single Scrub, Cushy, in tree where BQ's seen yesterday. But BQ's not around at the time.

Wind increasing 3:30 pm.

See pair cayana-napicapilla alone. Silent. Top tree 20 ft up.

Have seen several pairs BT's alone. (Unfortunately, however, there are a lot of birds moving thru tree-tops from time to time which I can't identify so I can't rule out the idea that mixed flocks occur here.)

3:55. See single ♂ Blue-capped Euphonia alone. 30 ft up in tree.



More Slate-throated White-eyes alone 4:08 pm.

See group 4 BT's together. Family, Alone.

Another single cayana-ruficapilla alone.

I wonder why I haven't heard any BG's singing yet (4:15)? Too much wind for them to perch securely on exposed limbs???

See a small green hummingbird feeding on Guava flowers. Exact same tree where BG's fed yesterday.

Catch brief glimpse dark bird passing low thru very dense scrub. Uttering lots high then plaintive "seet" notes. Presumably Atlapetes. Either torquatus or (even probably) brunnei-nucha. Alone.

Rain 4:35 pm. Leaving.

COMMENT: Although my observations this afternoon were very poor and sparse, they would suggest that mixed flocks are at least rare, here, at this relatively low altitude. As in Merida.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

May 12, 1965  
Region of Purace'

Arrive same place as yesterday morning 5:25 am. Rain and fog!  
Quite impossible to work for the time being.

Audible sparrows and thrushes making usual noises 5:45 am.

Go on to another area. Low thick scrub. Arrive 5:55 am. 3210 m.  
10,350 ft. Fog & rain not too bad now. Going to try to do some work.

Everything dead quiet 6:05 am.

Then hear some Pseudotyrannus type songs in distance. Also some Tou



can't type coals. One White-throat (presumably Yellow-faced) song 6:11 a.m.

Incidentally, in this natural-looking scrub, there are almost no flowers now. Certainly no dark red cap shaped ones. I.E. the non-commensal *Deglossini* (and many hummingbirds) must be much more common in young second-growth here than in mature or nearly mature scrub.

6:25. Now beginning to see a few (unidentifiable) birds moving around in distance. NOTE: Altho the weather is not too bad now, it poured all night. It may take the birds some time to recover from the down-pour.

See 2 Green ~~VIII~~ Hummingbirds alone. One chasing the other in flight. Silent.

Rain still almost stopped 6:33 a.m. But fog is still thick.

6:40. See pair Black-Orange Tanager's distant tree. Ranging 15-30 ft above ground. Definitely alone. Perhaps this species is not gregarious here? If so, why doesn't it occur in Quito region.

NOTE: I forgot to comment on one point yesterday. There were a surprising number of inter-specific disputes yesterday (quite apart from encounters between species of *Deglossini* social complex). Is this correlated with the fact that some species are becoming non-gregarious here?

Now fog is lifting, but rain is getting worse.

6:47. See single ~~IV~~ *Turdus* alone. Very low in thick scrub. 2 ft above ground. Silent.

At same time, hear Laf songs in distance.

6:58. See single Laf alone. 6 ft up in dense scrub. Utters a few "So et" notes. Then flies on.

There seem to be few or no footy Thrushes here. But lots of farm birds. Very different from the other area here where I have worked!



444. Then after 10:00 R's on dense scrub, 17:04. But then see that they are a  
detached group, all flying together. Alone.

445. See another Raf along 17:20. Low scrub edge highway.  
17:35 See single PR Atlapetes silent and alone. On ground and very low  
in sparse grass second growth between highway and mature scrub.

446. Rafs still singing from time to time. No other songbirds audible. White  
starts also quite silent.

447. Then see single boaty Thrush alone. 10 ft up small tree. Silent.  
17:50 See single Towheebly, 10 ft. Thick mature scrub. Alone.

448. Rain still continuing, but sun is starting to show through clouds.  
At the same time - and probably not coincidentally - Rafs are singing more fre-  
quently. Still no other songbirds or Whitestarts audible.

449. There is one aspect of Raf behavior in this whole region, now, which  
I have forgotten to mention. The Notes of the Rafs here are then and "ready"  
The notes of their songs could be described as having a faint "rattle undertone"  
that is like the Yellow-faced Whitestarts. The notes of their songs  
are clear and full. This is one of the best distinguishing marks between the  
songs of the 2 species.

450. See another single Towheebly alone. In flight.  
Well Well Well! Definite mixed flock. Go up hill. Reach area, 32-

55 40 m. Edge of mature forest with lots of tall trees. See single Blue & Orange  
feeding in tree 10-25 ft up. Followed by single Towheebly. Raucous at same hei-  
ghts. Birds usually 15-25 ft apart. Silent. Blue & Orange continuing picking insects  
off leaves. Towheebly apparently not feeding. Then a whole group of birds  
appears. All close together. Moving through scrub of medium height (this scrub  
is partly burned). In direction of trees. Apparently following Towheebly and



57 Blue & Orange Just came a group of 5 birds. <sup>all 3</sup> 3 all-yellow *Synallaxis* (quite probably same species seen in Eastern Cordillera). <sup>1</sup> 1 large olive, yellow, blue and black finches or tanagers (no. LXXXIX). All within a few inches of one another 3 ft above ground. The LXXXIX were silent. The *Synallaxis* uttered "CN" type notes. Following them 5 birds were a pair of PR *Atlapetes*. When they first appeared they were 5-10 ft behind the *Synallaxis* - LXXXIX group. About same height above ground. The PR's come and "muh" some. Following lots of miscellaneous notes. Also some loud "Twitter" as "Greeting". Then all the birds move off. Apparently in exactly the same order as they arrived. Going downhill into forest.

Just before I became aware of the Blue & Orange and Firebelly, I saw a single <sup>all 6</sup> yellow-faced Whistler 20 ft up in tree, about 30 ft away from the tanagers. Silent. As far as I know, this bird did not join the group.

This flock was seen ca. 8:15 a.m. Rain almost stopped. But sun gone behind clouds again.

Everything very quiet now 8:45. Going downhill again.

<sup>all 6</sup> **ADDITON.** Just as the *Synallaxis* - LXXXIX group appeared, a single Laf joined flock. In scrub. 10 ft up. Quite silent. Stayed with the group for less than a minute. The Lafs here certainly do "escort" flocks as (relatively) frequently as any non-commensal Diglossini anywhere.

49 9:00 a.m. See pair <sup>all 6</sup> Blue & Orange tanagers (possibly same pair seen earlier) feeding in small trees, 6-15 ft up, in dense mature scrub. Silent. Apparently alone. (There is a single *Oreotheca* in tree about 20 ft away from the tanagers for a minute or so. But the 2 species do not seem to be paying any attention to one another.)

9:15. See single sooty Heron, silent and alone, in low scrub by



the road. And then another

Rain starting again now 9:18 a.m.

Tap still singing occasionally 9:27

50

See a single *Forficella* fly by, alone, in very mixed scrub edge road

31

See a single *P. Altapetes* in low scrub edge highway. Utters "Tic" notes and "Tee" s. Definitely alone

46

9:35 Another single *Forficella* flies by alone. Plunges into thick alpi

ne scrub. It's not may be in this patch of scrub already, but remains in

50

In any case, there are other birds in the scrub. At least 1 Blue

67

Orange Tanager and 2 White-bearded Flycatchers. All 2-4 ft above ground

Definitely keeping under "canopy" of scrub. All close together. Silent, except

for "CN"s. Then group moves off, very low in scrub. White bearded Flycat

chers f —————> group.

Leaving 10:05 a.m.

# COMMENTS:

Today's observations would seem to confirm my earlier impression of the mixed flocks here. Most nearly comparable to mixed flocks in the Eastern Cordillera. The same "type" of flocks (i.e. "blue and yellow mountain tanagers" & *Altapetes*), although some of the species are different. Possibly (?) mixed flocks are a little less common here than in the Eastern Cordillera. And they do seem to be most conspicuous when weather is only slightly bad. (Incidentally, I rather wonder why I haven't seen more "arborescent" flocks along the edges of tall forest. And certain species which one might have expected them to be very conspicuously absent. E.g. *Cyanocephalus*, the *P. Altapetes*, and, probably, *Prioniturus* *neglectatus*. The absence of the first two is particularly surprising, in view of their presence on Montequi



SEE ALSO TODAY'S NOTES ON MIXED DIOLOSSINI

EXTRA COMMENT: Today's observations would also confirm another of my earlier unguessed. None of "my" species is breeding here now.

May 14, 1905  
Region of Purcell

Arrive same place as May 12, 3:45 pm. Right rain.

Walking along road. Everything very quiet. Rain stopping - but fog coming in 4:02 pm.

1st W 33  
Laf. singing 4:04. 4 ft up dense alpine scrub. Actually, there may be 2 Laf. here. Get glimpse of what looks like supplant.

Fog lifts temporarily 4:37. Now sun trying to show thru clouds 4:42. No outburst of bird sounds or movements.

44  
4:50. See single Whitebeard alone. Top small tree in scrub 20 ft up. Uttering a few "co"s. Then hear some other bird sounds in neighborhood. Hummingbirds starting to fly around and feed.

5:17. See large mixed flock. In small trees, alpine scrub, at first

75  
110  
177  
50  
Group includes 3 Whitebeards, 1 Towheebell, 2 Blue & Orange Tanagers, 3 Black & White's (Juncos or Hemispingas - no. ~~LXXXX~~), 1 tree creeper, 1 of the little streaked flycatchers which utter Allen-like R's. When first seen, Whitebeards in lead. Towheebell f ———> Whitebeard. Then comes the tree-creeper. Then the little streaked flycatcher. Then the 2 Blue & Orange Tanagers. Then the 3 Black & Whites. Then the Towheebell passes over the Whitebeards and takes the lead. Whole group moving rapidly thru the trees.



All birds 10-15 ft above ground. Then, suddenly, the 3 Black & Whites move to one side. Start to move then lower alpine scrub. 5-10 ft above ground. The Trubell, the streaked flycatcher, and the Blue & Orange repeatedly follow the Black & Whites (At this time, the order of the birds which are following, i.e. their "precedence" in the "procession," changes rapidly and repeatedly.) The Whitebeards and the tree creepers remain "behind" in the trees, but follow a course of flight is almost parallel with that of the Black and White group. Then a Jay joins Black and White group briefly. Then a pair of Larks joins the Black and White group. Stay with it for some time. But then the Larks fly away. Nothing follows them. Then the Black and White group moves back toward trees. The Black & White's themselves apparently still in lead. Apparently beyond, or just in front of, the Whitebeard tree creeper group. Then the whole assemblage moves downhill and out of sight. The assemblage as a whole was quiet throughout the period of this evocation. Most birds uttered only occasional "CN"s. But the Jay sang briefly while it was with or near flock.

High almost clear now 3:30. Sun low in horizon. No wind. Cold. Everything quiet

NOTE: For the first time ever, I can see summit Purace volcano. And I find that this area where I am working is really on the NNW slope of the mountain. Must be very close to beginning of east side.

Leaving 5:45 pm

May 15, 1965  
Region of Purace'



Arrive same place as yesterday 5:28 a.m. Sky largely overcast. It all quite dark. Apparently not much wind. But it is cold!

First thrush sounds heard 5:38. Otherwise things are very quiet. I wonder how many species here go torpid at night, especially cold nights?

Going up hill. More bird sounds 5:45 a.m. But none of "any" species yet.

Everything dead quiet again 5:52. Then hear first Firebelly in dust and at 5:53. Then a variety of sounds by different species. Then more Firebelly. First Whistlers at 5:58. No diploids audible yet.

A single sooty Thrush flies by. Silent and alone.

6:01. Several Whistlers singing. Also some war. Complete overcast today of the two species.

55 6:10. See single B. nigrocristatus (definite) in low scrub right at edge tall forest. 1 1/2 - 3 ft up. Hearing uttering R.'s and loud "CN"s or "SHN"s. But definitely alone. (This site is very close to where I saw the mixed flock including rufous spine tails and olive, yellow, blue & black tanagers the other day. Perhaps the nigrocristatus were avoiding the flock that day???)

Sky clearing rapidly 6:18. Sun will soon reach this area.

6:21. Right at edge taller forest. See single Firebelly 30-40 ft up in tree. Definitely alone. Utters "seet" notes. Flies away.

Starting down hill again 6:28.

6:33 a.m. See mixed flock. All in tall tree, 15-30 ft up, in region down alpine scrub. Group includes 2 eximias, 1 Black & White, 1 Blue & Orange, 1 Whitehead. All quiet. All apparently looking for insects leaves & bark. The eximias may also be taking mistletoe. One Firebelly is —————> group. Firebelly also supplants —————> Black & White. This is certainly as brightly,



and diversely, colored a group as I have ever seen!

57 A minute later, I see single PR Atlapetes 6 ft up in scrub, 40-50 ft away from the flock. This bird apparently does not join flock.

Flock drifts away without my being able to determine who is leading.

6:58. See single Towhees alone. 10 ft up in scrub.

6:59 A couple of minutes later, see single Towhee in tree, somewhat different area. Flies off. But then a single Blue & Orange appears. Following same route as Towhee. But 50 ft behind. Can't tell if it is really following the Towhee or not.

I am going uphill again 7:06 a.m. Sun shining brightly and hardly a cloud in the sky.

7:11 See a pair of Towhees fly by. Definitely alone. Then see another Towhee, 3 ft up in low scrub, just below where taller forest begins. Single and alone.

Everything very quiet 7:30 a.m. Going down hill.

7:51. Walking along road. See pair of PR Atlapetes in scrub. 3 ft up. Uttering "leat" Notes. One is carrying m.m. in bill! This bird hops around the other. Doing some irregular bowing and pivoting. Looking rather unritualized. High phase of bow is "upright" rather than St. The bird being hopped around responds by uttering soft twitter ("greeting") in high upright posture. Then both fly away. No other species showed any tendency to approach the R's during this performance.

So it would seem that some birds are breeding here now!

8:10 See a single Pseudospiza fly from tree top to tree top, 10-20 ft above ground. Also across road. Uttering PN-type Notes. Looking for a flock to join???



NOTE: This area here is quite close to some edges Paramo. The border between Paramo and scrub or forest here is very irregular. There are large patches of Paramo below (probably 200 ft. below) highest patches of forest.

8:30. It would appear that very good weather here discourages the formation of mixed flocks as much as very bad weather.

8:35. See pair <sup>W</sup>Whistlants (Sepia, Yellow faced) alone. Feeding in trees, 10-20 ft up. Also low and hidden in scrub. Uttering "CN"s

8:55 a.m. Cloud and wind increasing. Come to region partly burned and extremely varied vegetation. A few trees 20-30 ft tall. Also lots of fairly new-looking second growth vegetation. No typical Alpine scrub. There is a large mixed flock moving thru this area. Its apparently "permanent" members include: 1 Black and White, 3 Blue & Orange (2 adults, 1 juv.), 2 PR Attapetes, 1 of the little streaked flycatchers which utters Albi-like R's — no LXXXXT (this species seems to be a regular member mixed flocks), at least one White-bearded flycatcher, and 2 Littles. When first seen, the Black and White was in the lead, followed by Blue & Orange's. All others following these 2 species. But then the Black and White flies across road. No one follows. After this, the Blue & Orange's definitely in lead. And remain so for 10 minutes (approximately). Flock very coherent. All birds close together (1-20 ft apart). Different species in "second place", right behind Blue & Orange's, at different times. At least once, the Whitebeard, at least once, the PR Attapetes; several times, the Litter, at least once, the little streaked flycatcher. Eventually, the Blue & Orange Tanagers also cross road. Perhaps rejoining the Black and White, which may have been moving along parallel to the rest of the flock.

99 I caught one brief glimpse of a <sup>W</sup>Synallaxis with flock. Quite probably the usual rejoiner species. But I don't know whether it remained with the flock for a



101 long time or not. A pair of Towhees joined → group. But they disappeared almost immediately. Certainly did not continue following. From sounds alone, I think that there also must have been a pair of B. superciliosus toward the rear of the flock at one time, but I never actually saw the birds.

103 The Synallaxis was seen only in scrub. Very low. 1-2 ft above ground. The Towhees were seen only in tree, 20 ft up. The superciliosus, if present must have stayed low in scrub. All the other birds ranged 5-20 ft above ground. The Blue & Orange's averaged higher than all the others, with the possible exception of the White-headed.

Flock very noisy! Juvs. Blue & Orange did lots of Begging. Hoarse "Zhee zhee zhee..." Notes, with wing-Q. Towhees sang. The PR's uttered lots of loud twittering patterns. The presumed superciliosus uttered R's. Every one uttered lots of "CN"s.

*Litter WCC*  
(It has just occurred to me that one of the principal ecological differences between Litter and WCC's probably is height of vegetation preferred. Litter occurs in scrub quite frequently. But the WCC's I have seen, in the western Cordillera, have been very largely arboreal.)

All the birds in this flock were looking for insects on leaves and/or in bark or on twigs.

104 Just after the flock seems to have joined completely, a group of 4 Black & Whites appears! Moving rapidly thru trees and scrub. Uttering lots of loud "CN"s. They follow exactly the same route as the (preceding) mixed flock! And, at the rate they are going, they should catch up with it very soon.

Certainly, the fact that Andean mixed flocks seem to follow fixed routes (possibly usually at approximately the same time each day) must greatly facilitate all birds coming together.



9:55 a.m. Going back along road. Come across another mixed flock. In low scrub right at edge road. Group includes 2 Black & Whites, 1 PR Atlapetes, & B. nigriventris, all 2-4 ft above ground. Black & Whites in lead. B. nigriventris at rear, definitely following repeatedly. All birds quiet. Only occasional CN's. Black & Whites fly across road. Start to move in opposite direction, back the way they came. The PR does not cross the road immediately, but it does turn around and follow a course parallel to that of the Black & Whites. In the course of this doubling back, PR  $\rightarrow$  nigriventris. But then it goes right on past them. Eventually, it screws up its courage and flies across road, presumably to join Black & Whites. The nigriventris apparently do not follow.

Leaving 10:20 a.m.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

May 16, 1965  
Region of Purace

Going to work in first area visited here (the area where there is a great variety of Diglossini and hummingbirds). Arrive 8:38 a.m. Just starting to get light. Cloudy. Not too cold.

Thrush and Andean Sparrows noisier as usual.

Seeing this area once again, after working in the other area, I am struck by the differences between the vegetation of the two areas. In this place, <sup>almost</sup> everything (except the forest uphill) obviously is second growth. No trace real alpine scrub. This area could be described, in one sentence, as a whole series of patches of second growth, of very different size and character.



24 (in some place very low, in some place including small trees), scattered among patches of grassy pasture, with only occasional single mature trees (presumably remnants of original forest) at wide but irregular intervals.

SEE TODAY'S NOTES ON MIXED DIGLOSSINI.

6:44. See single Firebelly alone. In low trees scattered scrub. 4 ft up. Fairly noisy.

Rain suddenly pours down 6:45. Too hard to work for the time being. From car, see single Sooty Thrush fly by alone. Also see pair White heads alone. In isolated patch scrub. 6 ft up. Fairly noisy.

Rain getting much lighter 7:12. Going to try to work again.

In fact, rain stops completely within a couple of minutes. A sudden outburst of bird sounds right after rain.

Going along road. See pair Yellow bellies in second gutti scrub lay near. 6 ft up. Then, only 20 ft away, see 1 Yellowbelly and 1 Firebelly, only 1 ft apart from one another, same level, same patch of scrub. The Yellowbelly and Firebelly completely ignore one another. Then Firebelly flies down into lower scrub. Disappears from view. Yellowbelly remains behind.

See some more Sooty Thrushes alone.

Some minutes later, area about 100 yds away, see 2 Firebellies and at least 2 Yellow bellies flying from tree to tree together. Undoubtedly saw birds seen together earlier. Two Firebellies f ———> Yellow bellies. Quite clearly conscious, purposeful following.

See single Sooty Thrush going from isolated bush to isolated bush in pasture slightly uphill from road. It is repeatedly (at least 4 times) swooped at by a Cinnamon Hummingbird! Perhaps the Cinnamons dislike anything the



is black or blackish ??? (They seem to ignore the other hummingbirds, finches, tanagers, and Whitestarts around here.)

There really is a large outburst avian activity now! Much more than earlier this morning.

*Cum* See a couple of Cinnamon's chasing one another. Has rain made them (even) more aggressive than usual?

*111* 8:00. See pair Firebellies in small tree alone. They are almost certainly same birds seen with Yellowbellies earlier. They are only slightly up hill from where flock seen earlier. But they certainly are no longer associated with the Yellowbellies.

Seen starting to come out 8:10. It is getting warm.  
See a single montani cotinga alone. 6 ft up in scrub.  
Going up hill 8:13 a.m.

Many Eulania up hill. (This species seems to be as much a bird of young second growth and/or a commensal of man as any of the Diglossini.)

*112* See a single hoopy breasted Agelaius (not same species as in Western Cordillera). Alone. 40 ft up in isolated tree.

*113* 8:34. See single Firebelly alone. 15 ft up small tree.

*114* *115* 9:45. Single Firebelly flies by alone. Then see apparently single Attapetes only a few inches above ground in blackberry tangle. There also is a single adult Ator in an adjacent tangle about 25 ft away. But the 2 birds seem to pay no attention to one another. Ator flies away in opposite direction.

Clouds coming up again. It looks as if more rain is on its way.

All birds very quiet. Going down hill again.

*116* *117* *118* *119* *120* 10:20. Get very poor very mixed flock in hedge-like scrub. Apparently includes 1 or more Firebellies, 1 or more Yellowbellies, 1 Cy. There also are



125

✓  
 a pair of Sooty Thrushes in a nearly bush in pasture, and a pair of White bearded Flycatchers in another nearly bush in pasture. Both Poecilothraupis many. By swamp typical song phrases. Whitebeards many. Group disperses as soon as I arrive. Left to night.

Leaving 10:48 a.m.

✓  
 See a mixed flock on my way back to Popayan. Area of low and almost very young, but quite dense, second growth just above

127 ✓  
 Purace: 11:00 a.m. 2720m. 8880 ft Group includes at least 2 Atta

129 petes rufinucha, a couple of Synallaxis (generally gray, with rufous on

31 up and cap), several flycatchers (some or all apparently Pecunias - cert

132 ainly not the species associated with flocks at higher altitudes), and one

Alter Aster. Probably others. Synallaxis and rufinucha very low. 3" to 2' abo

ve ground. Flycatchers and Aster slightly higher, 2-4 ft above ground.

All fairly quiet - except for something (juv. rufinucha?) uttering Beg

ging type "Zlee" Notes. Impossible to determine who was following whom

I didn't get a good view of the wings of these rufinucha. But

I shouldn't be surprised if it was the same subspecies seen elsewhere in

Western and Central Cordilleras.

Incidentally, Colombian rufinucha seem to be birds of lower

altitudes, on the average, than Ecuadorian members of the same species. Why?

Do Ecuadorian rufinucha take the place of PL Atlapetes in many other parts

of the Andes. (NOTE: the Ecuadorian form which seems to be most closely

related to the PL, i.e. leucopterus, seems to be a lower altitude bird than the

Ecuadorian rufinucha.)

Why don't PL's occur here ??? Is their place taken by the Black and Whites ??? I rather think so.



Going to work near town this afternoon. Arrive usual place 3:33 p.m. Raining. But it looks as if rain will get pass. Going to try to work. Rain stopped by 3:40.

See single thrush alone. Sooty gray. Dark bill and eye ring. Probably also legs. Seems to be lighter toward rear underparts. Is this Pale-vented Thrush ???

See single Tangara cayana - ruficapilla alone. Perched exposed top tree 30 ft up.

Unfortunately, there is a hawk around here. Making all the small birds hide. (Certainly, none of them shows any tendency to mob.)

There are a number of hummingbirds feeding on Guava flowers 4:03. Unfortunately too far away to identify.

See a single cayana - ruficapilla ("CYR") in top bare tree. Alone. Joined by pair BT's. Can't tell if joining is intentional or not. All fly off together.

Then see pair BT's in trees alone. Also single CYR in another tree alone. Then see pair BT's and 1 CYR together in third tree. CYR flies off. BT's do not follow.

4:20 p.m. Hear what sound like Alcedo R's. In single now trees and scrub along trees. Then catch glimpses of bird which might have uttered the sounds. Apparently fairly light in color. Might be verreauxi or flycatcher. Yes! It seems to be some type of black-headed tody-type flycatcher. Alone.

4:40. See group 3 CYR's alone. Top tree. 25 ft up.

It is beginning to look as if the BQ's are not permanent residents of this area!

5:03. Starting to rain. Go along path to scrub edge larger river.



(23)

8:11 (the *Cauca* stuff?) See single bird which looks (in silhouette) and sounds like *Scm. Aloni*

Leaving 8:15 p.m.

May 17, 1965  
Region of Purace

Arrive same place as yesterday morning 8:43 a.m. Getting light. Sky half clear, half cloudy. Looks as if there might be rain later on.

8:21 See single Yellow-faced Whitestart alone 4 ft up in scrub

8:31 See single Sooty Thrush alone 3 ft up in scrub

Going uphill 8:45. See another single Sooty Thrush alone Top of small tree. Then see another, in flight. And then a couple more single Sooty Thrushes alone

8:51 7:30 See pair Yellow-faced Whitestarts alone feeding low in scrub and high in trees. Defecating alone. One individual sings occasionally

8:40 Then see single *Scrub*, moving thru tree-tops, 15-25 ft up. Moving but definitely alone

8:53 7:57 See 3 *Scrub* fly by alone

Wind is getting stronger and stronger. And it is bitterly cold!

8:30 Down by road See 4 more Sooty Thrushes alone

8:53 Also see mixed flock in scrub by road. Group includes at least 1 *Scrub*, 2 PR *Atlapetes*, 1 *Lof*, and (apparently) 1 *Andean Sparrow*. *Scrub* in lead at front. Followed by PR's. *Lof* repeatedly f ———> PR. All three species 4-10 ft up in scrub. *Andean Sparrow* also appears to follow ———> PR's repeatedly. But it is at a much lower level in scrub. 6" - 1' ab



one ground. All birds quiet. Then Firebelly flies away to clump of scrub approx  
or exactly 30 ft away. Moltwing follows.

Leaving this area 8:45 a.m.

Arrive area where rufinucha seen yesterday 9:15

Then I can vocalizing and see display flight! Then see another  
apparent I can display flight. Then see what looks like Atter display flight  
with Twitter about 30 yds away

9:22. See single Lofty Thrush alone

137 Slightly uphill, see pair of Yellow-faced Whitestarts. Moving along  
g ledge-like now-drobbes & small trees. 4-10 ft up. Quiet, but uttering  
occasional "cp"s. They are followed, at least for a few seconds, by 1 or (more  
probably) 2 CC's. One CC utters rapid formless Twitter (possibly "greeting")  
141 Otherwise CC(s) silent. Then CC's seem to disappear. A second later, an  
Atter joins ———→ Whitestarts. Silent. Both CC(s) and Atter ranging  
142 6-12 ft up. Then 2 rufinucha j ———→ group. Silent. 3-12 ft up.  
143 Then Whitestarts fly on up hill. Atter f ———→ Whitestart. rufinuchas  
| ———→ group.

So CC and Atter territories overlap here too.

The rufinuchas here have white spots on wings. (Perhaps gugar  
common is characteristic of this whole subspecies?).

Wind is not too strong here. And sun is trying to come out  
now 9:40. It is fairly warm.

✓ 91 Lots of Lofty Thrushes alone here!

9:54 See a single cyanocephala alone. Feeding low scrub, 2 ft  
above ground.

10:04. Another area. Large expanse medium height second gro



with see single cyanocephala fly by alone. Probably same individual seen earlier. Uttering "CN"s and "PN"s. Then we saw bird again a few minutes later still alone.

Again see cyanocephala alone 10:26

Leaving 10:30 a.m.

COMMENT: There is no doubt that there are fewer mixed flocks in the area where I worked first today, i.e. the high altitude area with obviously second growth vegetation, than in the other area where I worked on previous days, i.e. the high altitude area which has more or less "natural" and "natural" looking "alpine scrub". I would like to believe that this difference is due to the fact that the vegetation of the former area is more "open" than that of the latter.

Arrive place near Popayan itself, on road to Purace, 3:37 p.m.  
Patch of forest. Doesn't look very natural. No! Won't do.

Arrive another area 4:00 p.m. Edge of same big river visited yesterday. It is the Cauca! But this area is approximately 1 mile from area visited yesterday. Includes a variety of second growth vegetation, including trees, both along river and along ridges. 5925 ft 1760 m.

It is sunny and hot now.

See several hummingbirds which may be Scans feeding on flowers of Gnava. No! At least one of them is not Scan. About same size, bill fairly long; slightly downed (downward), purple chin, throat, and whole center breast and belly, head and sides breast & belly green. Another species Colibri ??? Actually, there are a number of different species of hummingbirds feeding in the Gnava by river here.

4:15. See single CYR alone in tree-top



Also see a number of PT's fly by alone.

Then see what looks and sounds like Scav. display flight.

4:23. See pair PST's in tree, 18 ft up. They move on. Then a new one flies into same tree. Apparently not following PST's.

Lots of different flycatchers around here. Also 1 Parula Warbler (presumably Tropical). The Parula is uttering R's.

4:36. See ♀ or juv. Raphiochlamys flammeogera (both orange and yellow underneath). Alone. Edge scrub & pasture. 3 ft up.

5:20. See single tanager, probably a Pyracida rubripes I have never seen before (no. LXXXXII), 3 ft up, isolated patch scrub, edge of river.

Leaving 5:25 p.m.

COMMENT: It probably is significant that the presumed Pyracida was alone. Blue & buffy, or blue & chestnut coloration is much less common or widespread here than in the Southern Andes. The "functional" equivalent of blue & buffy here, and probably throughout much of the Northern Andes is blue & yellow (see the Yellowbelly, Dabunia, etc. & Buthor aupis species, Comprocoma, and cyanocephala - in some areas).

NOTE: The cyanocephala here may illustrate the same general principle cited above. They may be less gregarious here than in many other parts of the Northern Andes. Thus explaining why they were rare in the Quito region.

May 18, 1965  
Region of Puracé

Going to work in refrancha area again this morning. Arrive



5:56 a.m. Sky clear Warm Already light

Lots of bird noise. Lots of hummingbirds. Also *Dubium* singing  
Lots of single *Thryothorus* flying around alone

Birds much more quiet by 6:04 a.m.

I have yet to see the *Dubium* that is singing. Apparently perched low  
in scrub or in small tree. But certainly alone

6:07 a.m. See mixed flock in "hedge" very close to where *Whitethroats* are  
- *rufinucha* - CC - after flock seen yesterday. Apparently partly same flock. Now  
includes at least 2 *rufinucha* and 1 CC. CC silent. Feeding on insects on leaves  
*rufinucha*s occasionally noisy. "Tutters" and R's, apparently as "Queen  
go". CC preening when group not in movement. CC 5-10 ft up. *rufinucha*s  
5-8 ft up. At least twice, CC f ———→ *rufinucha*s.

Everything, except the *Scans*, very quiet and calm 6:40 a.m.

6:50. Another area. Low thick scrub by road. Come across at least  
2 *rufinucha*s. One uttering "Zlee" Notes. Begging? These presumably  
are the first birds seen in this area, a couple of days ago. Certainly not seen  
yesterday or earlier this morning. There are other birds not far off in same  
patch of scrub (including 1 "Pewee"). But I can't tell if they are really asso-  
ciated with the *rufinucha*s or not.

More footy *Thryothorus* alone.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

Still more footy *Thryothorus* alone. In very low scrub 8:30 a.m.

9:04 a.m. Region of very low thick scrub near road. See single *ruf*  
*nucha* apparently alone. Only a few inches above ground. Uttering "Zlee" Notes  
relentlessly. Then a single CC flies in! Lands about 10 ft away from the  
*rufinucha*s 2 ft up in bush. Silent. Then flies on *rufinucha*s do not follow.



It seems very unlikely that both the CC and the rufinucha were the same individuals seen associating earlier. This is almost 1/4 mile away from where association seen earlier. I.E. it is beginning to look as if the CC's here have a special inter-specific preference for rufinuchas!

I wonder if this is partly due to the fact that the rufinuchas here have a white "speculum" on wings — just like CC's ???

See a single Aster alone in distance.

9:36. See a single cyanocephala alone. Very near where bird seen yesterday. Presumably same individual.

Clouds coming up now.

See single fermalini quite low in scrub. A parus-like flycatcher about 6 ft away. Possibly associating with one another.

Arrive same place as yesterday 3:07 p.m. Sunny and warm.

There all sorts of hummingbirds all over the place here!

3:18 p.m. See single tanager LXXXXII here. Alone 15 ft up in Guano tree.

See single CIR fly by alone. Then 2 more. Also alone.

See same LXXXXII fly by alone.

Clouds coming up now 3:30 p.m.

Then see single PST going from tree top to tree top. Alone 20-30 ft up. Apparently silent.

3:43. See single Red-breasted Blackbird in single, low, isolated scrub in center pasture. Then see single adult Tangara heinei, 4 ft up, in tall hedge-like scrub. Both birds quite alone.

This area is reminiscent of Chonos de Milla — except for the absence of Diglossini!



3:32 p.m. See single Scarus alone. Identification quite definite. Does not display. Then perches 20 ft up, top tree, utters "long" of "chak" notes. So the supposed "Scarus" I saw at the other area near Papayán a few days ago probably were really Scarus!

4:01. See (another?) Scarus alone, 6 ft up small tree in hedge-like scrub.

Leaving 4:35 p.m.

May 17, 1965  
Region of Purmer

Arrive same place as yesterday morning 5:20 a.m. Still quite dark. Sky half cloudy.

Lots of Sooty Thrushes alone as usual!

6:19. See single Phaethon auror-ventris ("Black & Yellow-green back") silent and alone 6 ft up in bush, area low thick scrub.

6:32. Single Blue-Black (nanorini) flies by. Uttering "PN"s. Definitely alone. Lands in small tree, 6 ft up, border scrub and pasture.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

8:30 a.m. Weather turned fine and warm. Region where CC-surface cha flock seen earlier. Group of 3 cyanocephalus fly from tree-top to tree top in "hedge" 10-15 ft up. Definitely alone. Utter a couple of twitters as "greeting" so there are at least 3, and almost certainly 4, individuals of this species in the immediate area.

Arrive first place where I worked at level of Papayán (scrub & long small stream) 3:05 p.m. Sunny and warm.



See single BT alone 20 ft up in tree. Also single "Pale-vented Thrush" alone 15 ft up in scrub. Then see single Palm Tanager alone 30 ft up, top tall bare tree. Then see single CYR in low scrub. There also are a lot of birds in scrub near CYR. Including at least 2 species flycatchers. But I can't tell if they are really associated with CYR or not.

Rain starting 3:27 pm. More or less stopped 3:40 pm. Then starts again. Stops again.

With each beginning of rain, there is a sudden outburst of bird noise. But nothing I recognize very well. Probably large flycatchers.

3:50. See some more BT's alone.

See single "Pale-vented Thrush" 25 ft up in tree. Then see pair PS T's flying from tree to tree, 15-20 ft up. Both species alone.

4:20. Scram along little side-stream. Hear what seems to be Pyranga idea singing.

BB. BB's certainly do not seem to be permanent residents in this particular area!

Leaving 4:30 pm.

May 20, 1965  
Region of Purace

Arrive the highest area (alpine scrub) where I have worked before 3:22 am. Sky partly cloudy. Still quite dark. Looks as if fog may come in.

Everything very quiet 5:30 am. Quite unlike rufinucha area yet in morning same time!

A few bird sounds 5:34 am. Psittolophus? Then quiet again.



NOTE: Checking my altimeters. Now, they read 10,400 ft and 3223 m., at alt just slightly above road.

Everything still very quiet 5:43, altho not absolutely silent. Sounds gradually increasing 5:50. Can hear Jumbelly and what sounds like B. nigracristatus in distance. 5:53. Hear first Laf song. Very prolonged. No other birds seen or Whittitart audible at the time.

6:01. Low scrub uphill, just below taller forest. See 3 B. nigracristatus in scrub, 2-3 ft up. Very noisy. All sorts of R's, "CN"s, SHN's, etc. But definitely alone. (This is approximately same area where I saw some species some days ago.)

Several Lafs singing now 6:10. But area as a whole is still comparatively quiet.

Turning colder, wind increasing 6:20. Going back toward road. See single Jumbelly 10 ft up small tree edge very low scrub. Silent and alone. Flies off immediately.

Hear first Yellow faced Whittitart song 6:26. No diglossini singing at the time.

Single Sooty Thrush flies by alone.

Now have now been quite a lot more Whittitart and Laf songs at irregular but not very frequent intervals. Little or nothing in the way of overlaps.

Everything seems to be keeping hidden now 6:55 a.m. Occasionally, I hear "CN"s deep in scrub, but I can't see anything. Going to walk along highway.

See single or Altapetes alone. 1 ft up in scrub. Uttering "teet"s and "Tint"s. Then another single Sooty Thrush flies by.

7:10 - 7:30. Watching mixed flock. Its region rather mixed fairly low scrub, including both alpine and obviously second growth, along edge of road.







7:45

Fun gone again 8:10 Now it looks like rain. Everything very quiet  
See a couple more magpie Larks alone, in low thick scrub, at different sites  
And still more sooty Thrushes alone

10:00

Going uphill along path again 8:45 am

A pair of *Chrysomitris* flies by alone 9:03

Everything is quite remarkably dead here now. Rather surprising. It  
is cloudy and cool, with some wind, but not very cold or windy.

Oh! 9:05. Fog coming in. (Can the birds here "anticipate" fog and  
d wind? I rather think so.)

10:15

See magpie *Synallaxis* alone (not *rupestris* species)

Fog passes fairly rapidly. They must be to come out again. Now there  
are a few more bird noises.

Going down hill again.

Leaving 9:30 am

COMMENT: A thought has just occurred to me. Perhaps  
the fact that the birds in mixed flocks here (and elsewhere in the north  
ern Andes) are much more variously colored, on the whole, than the bi  
rds in mixed flocks in Bolivia is evidence that the fauna of the Northern  
Andes is younger than that of the Southern Andes ???

May 21, 1965  
Purace - Tijeras

Going much further along road from Purace to Tijeras and Huma.  
Road now going down the other side of the mountain (other side from where I have  
worked before). This is the eastern side, but it also would appear to be the wetter



Observed, the natural vegetation of this area is very tall, humid forest. More or less like Munchique. But a great deal of it has been cut. Probably very recently in many areas. There is lots of bamboo thicket around in spots.

Weather today quite good. Little cloud.

Stop one area mixed forest and scrub 9300 ft, 5:43 a.m. Lots of bird noises. Much more than higher up mountain.

Stop another area 2823 m, 9225 ft. Low low scrub. Also forest nearby 5:53 a.m.

Not as much bird noise as at first place we stopped. But hear something that sounds like Yellow-faced Whitestart song. Nothing else audible at this time.

See single Booby Thrush alone. 2 ft up isolated scrub in pasture - marsh. Then see another, also alone, in similar scrub.

Then hear lots more Whitestarts singing 6:05 a.m. Then hear what might be Whitestarts alternating with Cy edge very low forest.

6:15 a.m. See mixed flock. Includes 2 B. luteoviridis (very, Base leucurus - like in shape - broad yellow supercilious) and at least 3 Pseudospingus. Possibly others. Moving thru very mixed but not very high second growth scrub, between marsh-pasture and forest. All birds very, very noisy; lots of "CN"s, "PN"s, R's, "flourishes", "twitters", what have you. luteoviridis definitely in lead. Pseudospingus follow repeatedly. luteoviridis ranging 2-5 ft up. Pseudospingus 4-20 ft up. All apparently looking for insects on leaves and twigs.

I first saw group when Pseudospingus flew into small tree in which Whitestart was singing. This can be clasped as a joining reaction. But the Whitestart immediately shut up, and flew away, into a tree 25 ft



away as soon as the Pseudospingus approached. I & E. Whittarcts may be re-  
luctant to join flocks when in singing mood. But then, about 2 minutes later,  
4, Whittarct definitely j —————> Pseudospingus. 20 ft up in tree. Whittarct  
does not sing while with group. Or at least not when very close to  
other birds. Now I see that there is a pair of Whittarcts with group. Definite-  
ly Yellow-faced. Every once in a while, one or both Whittarcts makes a short  
excursion, to other trees 20-30 ft away from group. One or both  
Whittarcts do (esp.) tend to sing while away on these excursions.

7 A pair of sooty Thrushes joins group. But only very briefly. And  
I think only because they want to "mob" me.

Now the Pseudospingus seem to be in lead. In any case, it is obvi-  
ous that they form the "real" nucleus of group. By far the most conspicuous  
members of the group. But group as a whole is slightly less noisy now, 6:30,  
than earlier.

It is clouding up rapidly now

Little 10

A single Little j —————> Pseudospingus in tree 15 ft up.  
Little is silent. Then single Yellow-belly j —————> Pseudospingus - Little  
Also silent. And it immediately flies down into lower scrub

Group goes out of sight 6:40 a.m.

Then catch up with part of it a few minutes later. In low second  
growth scrub interrupted by patch of pasture marsh. This bunch of birds  
includes 2 or (more probably) 3 Luteovirides. Certainly the same individuals  
also seen earlier (I have been able to hear them continuously). 3-4 up. Also  
1 Cy, only 1 ft from the warblers. Feeding on red berries. Then the Cy flies  
to a bush a couple of feet away. Perches 4-5 ft up. Sings repeatedly. All  
song phrases perfectly typical of the species in this region. Cy doesn't seem to

WJ



heard that the luteovirides are moving about comparatively within a few feet. The luteovirides continue to vocalize while Cy sings; but they are not quite as noisy as they sometimes are. Then the luteovirides start to move from bush to bush. Usually 2-4 ft up. Still noisy. And now I see that there are at least 3 or 4 birds of different species following the luteovirides. All staying low in scrub, and remaining silent. One of them be-  
12 nds is Blue & Orange. Apparently single. This Blue & Orange f —————> luteovirides repeatedly. Most of the other birds are unidentifiable, but I think that 2 may be Atlapetes. Cy also f —————> luteovirides Cy continues to sing occasionally while with group.

At this point, 6:50, rain starts, and quickly becomes heavy.

This last bunch of birds, luteovirides - Cy - Blue & Orange, etc., appeared to have become quite separate from the Pseudospingus - felle - Whitestart - Yellow-belly bunch. The "luteovirides bunch" apparently more characteristic of low scrub than the Pseudospingus bunch. Obviously both luteovirides and Pseudospingus are parvus nuclear here. And they are nuclear to different sub-groups, which sometimes merge and sometimes become separate. Obviously allo-gregariousness must be highly developed in this area. (viz at least 2 parvus nuclear species in same place - in contrast with some other parts of the Andes)

It is remarkable to find 2 "stratified" sub-groups in an environment like this. Presumably the "higher" group also is characteristic of adjacent forest or forest edge.

It also is remarkable to find Cy with "lower" group.

Rain stopping 7:15 a.m. Going to look at other areas

7:23. See single bird which may be Heuripengus superciliosus



(whitish supercilious stripe) above, 3 ft up, in dense scrub along edge of road. Noticing "feet" notes

There seem to be a number of Green VIII hummingbirds around

17 35 Another mixed flock. In vegetation along road. Very mixed.

VIII  
II  
HO 18 small trees. Long bamboo. Other bushes. Group includes a Yellow-faced Blue Warbler, and 2 of what appear to be *H. atricapillus*. White-throats in lead. They

climbing small trees 20-25 ft up. *atro-capillus* following. Tending to stick to bamboo, 15-20 ft up. All quiet. There certainly are also some other birds

19 with this group. Ah yes! One Yellow-bellied at least. Tending scrub & trees

22 2-15 ft up. Sometimes noisy. Then see 2 PR *Atlapetes* and 1 *myiodynastes*

3 ft up very sparse scrub across road. They look as if they want to join other birds, but are afraid to because of my presence. They are quiet

Yellow-bellied f ———> group. Then bird goes by, narrow things fly across road (to PR - *myiodynastes* side) without my being able to identify

them. All disappear from sight, moving low thru thick scrub.

Going on to another area 7:58 a.m.

See another single Sooty Thrush alone. Then another

Rain starting again 8:05 a.m.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

Leaving 8:55 a.m.

Arrive another area 8600 ft. 9:03 a.m. Some forest near pasture

Go along short path in forest. Everything dead quiet, except for some hummingbirds. The area itself looks rather like Agua Bonita in the Eastern Cordillera

See a single Sooty Thrush alone. Edge forest. No! It's a pair.

Go on down to another area 2550 m. Very scrubby second growth

9:55 a.m. Everything quiet. Probably the weather. It is sort of the hum before the



storm now.

23 Near repetition which may be Yellow-faced Whitestart Song 10:01. Then a single Carpodacus-type 31 ft up in tall tree. Apparently saying species as in Thamn. elegans. Then see two birds in tree 15 ft away. Apparently Pipilo rufus — except that one, at least, seems to have instead of black head. Overhauls the other. Then all 3 birds fly off. The two species apparently going in different directions. Then a pair of nigro-viridis appears, briefly, in one of the same trees. Flies on. This may be part of a diffuse mixed flock.

Rain again 10:10.

Leaving 10:20 a.m.

10:45. Region of shrub, dense mixed forest and scrub. 9050 ft. What appears to be single Atlapetes torquatus flies across road. Utters "seet" Notes in flight. Land. Then plunges into low scrub. Immediately, a Yellow-faced Whitestart flies into tree just above scrub. Coming from opposite direction obviously a joining attempt. But torquatus is now invisible and inaudible. Whitestart flies away.

Then Dubious singing in distance.

31 Then see Laf singing typical songs, 10 ft in tangle of vines growing up along trunk tall mature tree, presumably remnant of original forest. Feeding on cup-shaped pink flowers. This vegetation is relatively thick and dense, and there are more tall mature trees around than in any other area in which I have ever seen Laf. Then a single PL Atlapetes (definite) appears in same tangle of vines. Pauses within a couple of ft of Laf, after the latter has stopped singing. No obvious reaction between the two birds.

Obviously, I am on the fringes of a mixed flock!



Then I go approximately 50 yds up road see a single Yellow-faced Whitestart, 20 ft up, in a tangle of vines with pink flowers, the same species on which Laf seen feeding. Whitestart sings a number of phrases. Then shuts up. Laf joins —————> Whitestart. Then a single Yellow-belly joins —————> group. All three birds flitting about in trees and vines 15-25 ft up. Twice, Whitestart follows —————> Laf! Then Laf sings, while Whitestart is only 1-2 ft away. Then Whitestart starts to chase Laf. Repeatedly! Obviously hostile. Some chases may include bodily contacts. Laf sings again between and after chases!

Then a whole man of birds appears in exactly same area. One PL Atlapetes; 2 or 3 more Yellow-bellies; another Yellow-faced Whitestart; 1 or 2 Ruddy Flycatchers (LXXXVII - same species as in the melique); 2 Blue & Black Tanagers; at least 1 Sette; and at least 2 Basilantemus and/or Hemispungus types, which I can not see well enough to identify. Also at least 1 flycatcher LXXXXI. Probably others.

All these birds may be said to have joined —————> Laf - Whitestart - Yellow-belly group.

For a short while, the Yellow-faced Whitestart seems to be the leader of the group.

All the birds except the Basilantemus and/or Hemispungus types are ranging 5 - 25 ft up in a great variety of vegetation. The Basilantemus and/or Hemispungus types, by contrast, are staying very low in scrub, probably ranging from only a few inches to 3 ft above ground. They also are staying well under cover.

Most of the birds seem to be looking for insects. Flycatchers and Whitestarts flycatching. But the two Blue & Blacks and the Yellow-b



blues, at least, are spending all or most of their time eating fruits. Especially small greenish berry-like fruits.

*Laf* Eventually, Whitestart stops chasing *Laf*. *Laf* stops singing. So  
 7 seconds later, Whitestart sings some more. Then shuts up.

Group now moving thru extremely varied scrub edge road. See all trees, large bushes, and some bamboo. Rather surprisingly, the *Laf* continues to accompany the group for some appreciable distance. *Laf* quite silent now.

Then I see that one Whitestart is chasing and attacking the other. Chases with "CN"s and/or "SHN"s but no song. I presume that the aggressor is the same one who chased *Laf* earlier. It is interesting that both cases of inter-specific hostility seen in mixed flocks in this region have been closely associated with intra-specific hostility (viz. the fights seen yesterday or the day before).

Now group flies across road. Bailesterus and/or Hemiprocne types definitely in lead. Everything else can be said to be following, and following repeatedly. I can't see much of the order of precedence crossing the road. But certainly the PL, the Whitestarts and the Yellow-bellies do not come immediately after the Bailesterus and/or Hemiprocne types.

*Ag* *Laf* Then by joins → group. Sings repeatedly, perched 10 ft up in small tree. *Laf* and Whitestart silent at the time. (There certainly have been absolutely no overlaps Whitestart and/or Diglossini songs at any time in this flock.)

As far as I can tell, there are no particularly close associations between any two species within this flock. Certainly the Diglossini are not associating with one another.



Group gradually works its way up hill. Through very mixed vegetation, including all sorts of scrub (except alpine) and mature trees. All birds apparently ranging through approximately same elevations above ground as earlier. Incidentally, the group as a whole has been noisy throughout — many other species uttering a variety of vocalizations in addition to the Whistlers, Lof, and G.

As group gets further away, I see that Yellow-bellies and White-throats are lagging behind. Now bringing up the rear guard. And now there does seem to be a particularly close association between these two species. Each repeatedly joins and follows the other!

Group finally disappears.

I wonder why there are no GT's here??? The environment seems ideal for them. Perhaps GT's don't reach such high elevations except in places like Munchique, where area of high elevation is very limited.

Leaving 11:45 a.m.

#### COMMENTS:

I. I think we may assume that PL Atlapetes is more or less strictly confined to areas of extreme humidity at high elevations. Unlike the PR, which seems to occur in both extreme, and moderately humid environments at similar elevations. The presence of Yellow-bellies may also be an indication of extreme humidity. This may help me to interpret conditions in other areas.

(Note. The Fordiella may be largely confined to situations of only moderate humidity in the northern Andes — but this is not necessarily true in the southern Andes.)

II. It would appear that mixed flocks are really very common



on in this region as a whole. Possibly slightly less common than in the Munchique region as a whole. But flocks do seem to be more common around 7000 ft here than at the same elevation on Munchique. (This comparison may not be entirely fair, however, in view of the small extent of high altitude areas on Munchique.)

It might be added, in this connection, that the frequency of mixed flocks here is matched by the frequency of mixed flocks seen at lower elevations in the northern part of the Central Cordillera a couple of years ago. Extreme allo-gregariousness would appear to be characteristic of the Central Cordillera as a whole !!!

How does this help me with my various hypotheses?

The development of mixed flocks might be positively correlated with any one or all of a great variety of factors.

- (1). Number of species in region.
- (2). Age of region.
- (3). Humidity of region — and density of vegetation.
- (4). Isolation of region.
- (5). Size of region — and relative extent of frontiers.
- (6). Accessibility of region to invasion from outside, by "island-hopping".

Possibility (1) may be discounted. Because flocks are common in Bolivia, although the number of species there is only half of what it is in any one of the three cordilleras of Colombia.

Possibility (2) may be discounted because there is no continuous trend in the development of mixed flocks from South to North throughout the Andes. The trend is "reversed" in the middle. No



nth and south are similar, more or less, but the center is quite different.

The fact that mixed flocks were so highly developed in the areas visited today would tend to support (3). But humidity cannot be the whole answer. Mixed flocks seem to be highly developed in the northern part of the Central Cordillera, which does not seem to be very humid. And they do not seem to be highly developed in the Palca region of central Peru or the Machu Picchu region of southern Peru, both of which do seem to be very humid.

No (4) must have some effect (my Chiriqui?). But again it cannot be the whole answer. The Central Cordillera is not isolated.

This leaves me with (5) and (6). No. (5) must have some validity (my the frequency of mixed flocks in southern Andes). But (6) must also be important. As mentioned in my notes on flocks of the Western Cordillera (p. 13), this would seem to be the only way to explain why mixed flocks are approximately as highly developed in the Central Cordillera as in the Western.

May 22, 1965  
Tijeras

Going to work in area where Aquornis - Pipicola - Troglodytes group seen yesterday. Arrive 5:30 a.m. Just getting light. Cloudy. Altitude, according to my instruments now, is 8500 ft, 2593 m. Quite a lot of bird sound. Probably mostly through song. Then a greater variety of sounds 5:40 a.m. Nothing I recognize. 5:45 a.m. See single Yellow-belly. Perched exposed 20 ft up on bare branch.



note projecting above scrub. Definitely alone. Sings repeatedly. Sometimes overlaps those of Yellow-faced Whitestart in same neighborhood. Sometimes not.

Then see single Sooty Thrush alone.

Everything quiet 6:05 a.m. Then Whitestarts begin singing again.

Birds on general seem to be surprisingly rare here. Where I am working now is obviously young second growth scrub, but it is quite dense. There is pasture on 3 miles of scrub, but it is connected to forest on forest side. And there is lots of other forest beyond pastures. There don't seem to be many flowers around, but there are some hummingbirds.

47 6:44 Come across mixed flock - of sorts. 2 Whitestarts in tree, 15-30 ft up. One singing quite frequently. And I can hear a lot of other birds in scrub below them. It sounds as if there may be Antpittas, Yellow-belly (us), and even a Pipreoides. But all quite invisible.

More single Sooty Thrushes alone.

47 6:55. Get good view of another mixed flock. Includes 2 Yellow-faced Whitestarts, 2 Cys, 3 adult Blue & Blacks and 1 juv. Blue & Black. In young second growth along side of road. The 3 adult Blue & Blacks definitely in lead. Followed by the Cys and the Whitestarts (which alternate second and third places). Followed by juv. Blue & Black. Blue & Blacks quiet, with only "CN"s and/or "PN"s.

Both Cys and Whitestarts very noisy, however. Both sing typical song phrases repeatedly. They alternate bursts of song without overlap at least 15 times!!! Also sing at least 3 or 4 times with partial overlaps. And once with complete overlap. Short (but probably not all) overlaps occur because Whitestart begins to sing when Cys is in middle of phrase.

Once, one Whitestart repeatedly chases and supplants Cys! This dis



is silent. It is beginning to look as if Whitestarts have a special value - specific dislike for *Dryocopus*!!! But perhaps the *Dryocopus* are the only birds in mixed flocks which are small enough for Whitestarts to attack safely?

53 Two *Sooty Thrushes* separately joined  $\longrightarrow$  group. They seem to be more interested in me than in the other birds, but they separately stay with group for some minutes at least.

Whitestarts range 1-10 ft up. Flycatching. *Cyp* range 2-8 ft up. Eating small green fruits at least part of time. Blue & Black range 1-4 ft up. *Thrushes* range 3-10 ft.

Members of group stay close together. Usually only 5-10 ft apart. But group is not progressing very rapidly.

Go on down road a little. Find another mixed flock. 3 Yellow-faced Whitestarts and 1 adult Blue & Black. Blue & Black quiet, low in scrub. Whitestart(s) sing(s) occasionally. Ranging from low in scrub to 10 ft up in small tree.

It looks as if Blue & Blacks may be passive nuclear here (too).

Another single *Sooty Thrush* alone 7:35 a.m.

Go walking along edge forest ca. 8300 ft. Then along path in forest. Quite a lot of bird noise. But nothing visible (yet). Little glimpses of a few things up in dense scrub. Unprofitable.

54 8:45. See 2 adult Blue & Blacks (not together) fly from low scrub into tall trees 20-40 ft up edge forest. Uttering "Heet" Notes. Then I hear Whitestart song in same general clump trees. Is Whitestart attractive to Blue & Blacks?? (This may be partly the same as one of the groups seen earlier this morning.)

3 8:50 Along road. See single Yellow-belly, apparently alone, 1 ft



(56)

up in isolated clump form! Then see single Sooty Thrush in small bush 10 ft away. Both birds silent. Thrush flies past Yellow-bell, into scrub some distance away. Yellow-bell f —————> Sooty Thrush part way. Lands in small tree. Another Yellow-bell flies into tree 20 ft away. Both 10-15 ft up. Both quiet. Probably feeding on fruit.

Light rain starting 9:00 a.m.

See single Sooty Thrush alone

Leaving 9:15 a.m.

Arrive area where last big mixed flock seen yesterday, 9050 ft, 2750 m. Cloudy. But not raining. Just below fog level 9:30 a.m.

Single Sooty Thrush flies by alone. Then another. Now

9:45 a.m. See big mixed flock. Certainly partly the same flock as yesterday! Going in exactly same direction, on an exactly parallel course, just 50 yds away (I paced off the distance!). (And note that the flock is appearing at almost exactly same time.) The course today takes the flock thru vegetation which is lower, on the average, than that of the course yesterday. Lots of second growth bushes and small trees and climbing bamboo. Group today includes 1 ♂ Albi (definite!), 2 small brown ones, at least 4 Blue & Black's (apparently by 2 pairs — 2 groups of 2 individuals not associating with one another), 2 ♂ Pf. Altapetes, at least 2 (probably 3 or 4) Yellow-bellies, a large tree creeper, 2 Psittacus nigripinnatus (definite), at least 1 (probably more) Homophya negus atropileus, also 1 Sylvestris LXXXXT (heard but not seen). Possibly others. Certainly no Whitetails, Taf, or Cy!

Flock as a whole was quiet. Only exception was H. atropileus. This bird uttered lots of Begging type Notes. Juvenile?

Leadership of group changed repeatedly. When first seen, Albi was



in lead. Later on, I saw Black & Blues, PL's, and Yellowbellies in lead. The Paruliterus and Hemiprocne were never in lead.

*Alb* The ♂ Alb disappeared after a few minutes. Probably left flock. All the other birds stayed. Group coherent and moving rapidly.

The H. atripileus showed preference for bamboo. Ranging 2-15 ft up. All the others went thru all kinds of vegetation. Blue & Blacks 2-25 ft up. PL's and Yellowbellies, 2-25 ft up. The Alb, Paruliterus, and Wrens ranged 2-15 ft up.

Fog and rain come in 10:10 a.m. and I lose sight of the birds as they go uphill. When they left, 1 pair of Blue & Black's seemed to be bringing up the rear guard!

Leaving myself 10:15 a.m.

#### COMMENTS:

I. As far as my observations here go, mixed flocks seem to be commoner (and much larger) at higher elevations than at lower elevations. This is very different from the situation on Thunberg, or in the northern part of the Central Cordillera according to my 1962 observations.

Is there any general correlation between types of environment, or region, and relative development of flocks at high and low elevations?

Perhaps the sparsity of mixed flocks at relatively low elevations around Tijeras is due to the fact that the natural vegetation of the area is heavy forest, and the forest seems to have been cut down only very recently, in most areas. There has not been time for much second growth or edge vegetation to develop. Perhaps some of the local species have not had time to become adapted to second growth and edge.

I have not done much work inside the remaining patches of



forest. So the fact that I have not seen mixed flocks inside the lower altitude forests is not necessarily significant. But it should be noted that this morning, inside the forest ca 8300 ft, bird sounds seem to be scattered throughout fairly evenly. Not absent in some areas, and very abundant in others, as would be expected if all the birds were gathered in groups.)

US II. My observations today and yesterday would suggest that there may be some degree of special preference(s) among Yellow-faced White-eyes, Yellow-bellies, Blue & Blacks, and Cys. Not surprising, in view of the color patterns of the species involved. All are blue and/or black above, with yellow below in two cases.

III. Re the sooty Thrushes. It is my impression that they do not tend to "scatter" flocks, when they do join them, in the same way as the Panamanian species of Turdus.

IV. The area right above Purace, where Atters and Scans are common, is 40 KM from Papayán. The area where I first began work, where Lafs, Atters, Cys, and CC's (and Cinnamons and Green VIII hummingbirds) all occur, is 51 KM from Papayán. The highest altitude area, where Black and Whites occur, is 54.5 KM from Papayán. The area where the big mixed flock has been seen yesterday and today, and where the Albi was seen, is 73.5 KM from Papayán. The relative low-altitude area near Tijeras is 79.5 KM from Papayán.

May 23, 1965  
Purace' - Tijeras

Going to work this morning in area where Albi was seen yester



day. Arrive 5:30 a.m. Just starting to get light. Rain & fog!

6:05. Lots of single sooty Thraupes flying about alone.

6:15. See a PL Atlapetes fly across road into bamboo scrub. There also are other sounds in this scrub. Perhaps H. atropurpureus and a flycatcher. Apparently flock(s) is (are) forming already.

6:25. See single PR Atlapetes alone, in very low sparse growth under road. Silent. Only a few inches above ground. (This is a relatively territorial species, compared with most of the other brightly colored Atlapetes. No & very Chlorospingus-like. In shape rather similar to gutturalis and crumenus.)

A minute later, see enormous flock coming down hill across road from PR. Following more or less same route as flocks seen yesterday and the day before, but going in opposite direction. Group includes 4 or 5 Psaralopha pusillus, at least 1 Blue & Black, at least 2 Yellow-bellies, at least 1 Chondestes, at least 1 OT, at least 1 PL Atlapetes, 2 Yellow-faced Whitest ants, at least 2 B. nigrocrustatus, 2 Sittes, at least 1 Ruddy Flycatcher, at least 2 or 3 tree creepers (probably all same species - light patch on throat and light supercilium). Almost certainly others. Probably 25-30 birds as a whole. I.E. the flock is fully up to Thraupidae standards.

As far as I could tell, group was not joined by the PR Atlapetes or any species of Diglossa.

The group as a whole was very arboreal. More so than flocks seen previously in this area. Possibly scrub is too damp today to be comfortable. (Immediately, the rain started to come down hard during the period I was watching the flock, but this did not appear to induce any change in the behavior of the birds.) Birds occasionally entered tall bushes and fairly high patches



is bamboo scrub, but they usually stuck to trees, both second growth and mature.

*Sitta* The Pseudospingus were the most thoroughly arboreal, on the whole, ranging 15-40 ft up. Showed a definite tendency to stick to tree-tops, at any level. Flitting about on top, poking down into crown, apparently looking for insects. Everything else tended to stay slightly under the "cover" of the top most series of leaves. *Sittas* ranging 15-30 ft up. Definitely picking insects off leaves. Yellow-bellies and Blue & Black ranging 10-35 ft up. Couldn't see what they were feeding on. Tree creepers ranging more or less same elevations as *Sittas*. Whistlers ranging 10-35 ft up. Flycatching as usual. All or most of the rest of the birds averaged somewhat lower, probably ranging 8-30 ft up. The GT was seen only briefly, 25-30 ft up.

All or almost all birds very noisy. Especially Pseudospingus. White-throats sang occasionally. B. nigrocrinitatus uttered R's.

*Sitta* Leadership of group apparently changing occasionally. But usually being exercised by the more "warbler-like" types. Pseudospingus certainly in lead a good part of the time. Led flight across road. But I think the nigrocrinitatus and the *Sittas* also led for some seconds or minutes. Yellow-bellies usually near or at rear. PZ certainly showed no tendency to lead.

The Yellow-bellies and the Blue & Black tended to stay close to one another. So, probably, did the *Sittas* and the tree creepers?

One of the Whistlers chased the others from time to time. Also supplanted a B. nigrocrinitatus at least once. Chases & supplants silent. But chase followed by songs.

When flock was first seen, it was in area where there was a lot of bamboo among trees. There seems to have been one, or a small group, of PZ.



atropileus in the bamboo all morning. Numbers of flock certainly passed through and over this bamboo. They might be said to form atropileus.  
6 But then the flock moved on and across road. And apparently the atropileus did not follow.

Rain still continuing 7:10, but going to try to work again.

Everything quiet now. Presumably most of birds "sucked out" with flock.

8. Rain getting lighter 7:18

See single sooty hummers alone

Go up road several hundred yards. See another mixed flock. Apparently largely or completely different from flock seen earlier this morning. First see 114 a pair of yellow-faced Whitestarts in small tree on side of road 8-20 ft up. Then 115 see 4 or 5 of the All-Rufous Sparrows (apparently same species as in Eastern Cordillera and 1 Pl. Atlapetes) close together in very low scrub on other side of road. All ranging 6" to 2 ft up. Apparently feeding on insects. Pl. f. and s. 100 Sparrows repeatedly. Then Whitestarts s. 172 appear, apparently following Sparrow - Pl. group. At least two Yellow-bellies. And 1 Black-capped Finch. In small trees 10 ft up. Black-capped Finch f. 124 f. → Yellow-bellies. Then whole group moves along road, somewhere a long the way, they pick up 2 B. nigriventris and at least 1 H. atropileus. At first whole group, except the tanagers, remains in low scrub, both bamboo and "other" standing 1-8 ft above ground. At this time, the Yellow-faced Whitestarts appear to be in lead. Flitting about conspicuously. But I am not sure that the real leaders of the group are not still the All-rufous Sparrows, which are more or less hidden from my sight because they remain low (1-4 ft up). Yellow-bellies tend to remain 6-10 ft up in low trees; but once a Yellow-belly s. → Whitestart in low scrub.



W 12:4 The group also seems to have picked up a fly! I see a fly fly away from group, across road. No one follows.

Until now, it has been raining quite heavily. But now rain stops temporarily. And group shows a tendency to disperse. I lose sight of the Spine-tail, Basilantonus and Hemipungus. Also the Black-capped Finch. The Yellowbellies and P2 go up hill, and into mature tree. Ranging 15-30 ft up. And each species follows and joins the other repeatedly. Then they also disappear.

8 The two White-tails remain behind. Start to chase one another. One territorial, tumbling, aerial fight. Then they fly away in the opposite direction from the rest of the birds.

Flock as a whole was moderately noisy. "CN"s and a variety of notes. Little or no "song". (Cycenturus did not sing while with flock.)

Before this flock disappeared it had entered, a hundred yards or so, within the area where I saw earlier big flock. I.E. the "territories" of different flocks overlap to some extent. More or less like Manchagua!

Rain more or less stopped 8:15 a.m. But fog coming (back) in.

Both rain and fog stopped 8:50. There is no increase in bird sound.

See lots more toasty Thomomys alone.

10 9:12. See pair of Black-capped Finches. Definitely alone. Moving thru low scrub & bamboo thicket edge of road. 2-8 ft up. Apparently getting insects off leaves (at least in the bamboo).

W 9:25. See group of birds uphill. In trees. More or less where second mixed flock disappeared earlier. Can't identify most of the birds (there is a patch of fog up there). But group certainly includes 2 Yellowbellies. Then a single fly flies away from group. No one follows.

Fog coming down again 9:35 a.m.



142  
III  
70

WJ/III

A little further along road catch glimpses of what seems to be same group. Still uphill in trees. Hummer single PL fly up hill, apparently going to join group.

Leaving 9:55 a.m. Fog getting thicker and thicker.

COMMENTS: I am now coming to the conclusion that mixed flocks are at least as highly developed here as in the Western Cordillera. Note the large number of apparently passive nuclear species: e.g. the Black and White, the All-rufous Spontail, Pseudopygus, E. luteoviridis.

It is becoming obvious, however, that I must look at the avifauna of the more humid areas of Ecuador and Central Peru in more detail. The road to Santo Domingo and Maraynez!

WJ/L Apparently the WCC is not a regular member of mixed flocks at the altitudes at which I have been working here. Why? Is it confined to lower elevations here? Is it unable to compete with Pseudopygus (a species of similar size, equally arboreal, and probably also largely insectivorous).

Certainly bad weather did not discourage the formation of mixed flocks here this morning (altho it may have discouraged some scrub-inhabiting species, such as the PR Atlapetes and Diglossa spp. from joining the flocks).

It is interesting that I have not seen any Squirrels with flocks in this Cordillera. Why?

In the area worked today, the PL Atlapetes, the Yellow-belly, and (probably) the Blue & Black seem to be the 3 species which range most frequently from high in trees to low in scrub, thus "tying" together the



other largely arboreal or largely scrub species.

May 24, 1965  
Purace - Tijerina

Going to work same place as yesterday. Arrive 5:25 a.m.  
Heavy fog! Cold! Still quite dark (black in fact!)

First bird sounds 5:35. Thrushes and wrens. First "thraupine"  
DC 5:38 Lots of birds doing it. Barkaterus-type R's and floweries 5:42  
First Atlapetes type whistle songs 5:49. Overlapping all sorts of things. But  
no Agelaius or Whitestarts yet.

6:00. Birds in general about as noisy as yesterday. But probably  
moving around somewhat less frequently. Activity increasing 6:05. Yellow-bellied  
Tanagers moving around.

Visibility extremely poor!

Birds in general much quieter 6:17. Perhaps a flock has formed  
and gone already! If so, I haven't seen it.

Fog lifting a little.

See single Myiozetetes alone, 3 ft up in low scrub. Uttering  
R's. Then there is a sudden outburst bird sounds both sides of road. Scrub  
and bamboo. Obviously a mixed flock assembling! Lots and lots of birds  
mulling about in all directions, over area of at least 100 yards square.  
All very noisy. Lots of R's, "CN"s, "PN"s, a variety of songs, etc etc.

The group as a whole includes at least the following, at one time  
or another: 2 Pseudospingus, 2 Cnemidophorus, 1 Budytes cucullatus,  
13 (inc!), 2 "Whitestars" (inc!), 2 Blue & Blacks, 1 Yellow-belly, 2 H.



*atropileus*, 2 *Plush-capped Finches*, 1 *Sitta*, 1 *PR Atlapetes*, 1 *PL Atlapetes*,  
 2 *B. nigrocristatus*, 1 *Yellow-faced Whitestart*, 2 *Hycathier LXXXXI*, 1  
*Ruddy Hycathier*, 2 or 3 *tree-creepers* (all same species - same one seen yesterday - light throat and supercilious).

For about 10 minutes, the group does not "progress" at all. Birds going in all directions, and many individuals frequently flying away from main body of group and then returning. Gradually a sense of direction asserts itself and whole group drifts slowly down road. At this time, there is no consistent leadership. I saw the following lead at one time or another: *H. atropileus*, *PL Atlapetes*, *Pseudospingus*, *tree-creeper*, *Blue & Black*.

At least twice, *PL*  $\longrightarrow$  *Pseudospingus*. *Plush-capped Finches*  $\longrightarrow$  *atropileus* repeatedly.

Both the *Plush-capped Finches* and the *atropileus* stick pretty closely to bamboo. (The *Plush-capped* certainly is bamboo-loving here!) The *nigrocristatus*, "White-lins", and *PR Atlapetes* stick to low scrub of all types, bamboo and others. These 3 species ranged 1-10 ft above ground.

*Sitta* The *Butoropus*, *Sitta*, *Blue & Black*, *Memoropus*, *Yellow-belly*, *tree-creepers*, and *Pseudospingus* stick to trees, 10-20 ft up. *Pseudospingus* more frequently in the very tops of trees than others. The *Ruddy Hycathier* probably also spent most of its time in trees. The *Hycathier LXXXXI*, by contrast, tended to stay low in scrub. The *PL* and the *Whitestart* ranged all levels. *Whitestarts* more often high than low. The *PL* usually, medium.

The *Butoropus* ate fairly large green fruits. All the others seemed to be looking for insects (in their usual ways). The *Yellow-belly* got several caterpillars.

I did not see the *PR* again after the first few minutes. Perhaps it



left the group. But all the others certainly stayed together.

There was a lot of inter-specific disputing within the flock. Rather surprising. Couldn't identify combatants in many cases. But certainly the Whitestarts were never involved. Once a Blue & Black chased and apparently attacked a "Whitestripe". Once there was a dispute between a Blue & Black and a tree creeper. Are Blue & Blacks particularly aggressive here? Is disputing characteristic of the period when flocks are assembling???

After proceeding down road slowly for a while, group suddenly turned and went up hill. Probably accelerating at same time (i.e. having achieved complete vocal cohesion.) In distance, I can see that many of the birds have now gone 30-40 ft up in tops of mature trees.

It is interesting that Blue & Orange Tanageres do not seem to occur within area. Altho they did occur in similar environment on Montserrat, and also occur in alpine scrub only a few KM away here. They must be unable to compete with some other species in this forest. (No Blue-capped Finches???) (Note that the 2 species are not dissimilar in pattern.)

Everything very quiet after flock has gone.

Fog coming back in 17:10 a.m.

17.16. Going down road a little. Catch glimpses of what seems to be a pair of B. luteoventris. One on each side of road. Alone. Sound like luteoventris heard a few days ago. Uttering sharp SHN's.

Whitestarts singing occasionally in distance. No diglossini or Atlapetes audible at the time.

Then go up road. Fog lifts partly 17.38. And there is a sudden increase in bird sounds. Including Whitestart songs.

Everything unbelievably quiet 18:45 a.m.



PT  
H6

1993

8:58. See another mixed flock. Certainly not the same one seen earlier this morning. Quite far up road. Region of low but thick second growth interspersed with a few swampy marshy trees and some tall bushes. When first seen, group includes 1 Blue & Black, 2 Yellow-faced Whitestarts, 2 PL Atlapetes, 1 Yell. Warbler. Blue & Black definitely in lead. PL's and Whitestarts alternate in second place. Both follow and join Blue & Black repeatedly. Yellowbelly brings up the rear. Yellowbelly ranging 6-20 ft up. All others 3-20 ft. Group rather quiet. But Whitestarts sing occasionally. PL's utter Twitterers.

A few minutes later group crosses road. Goes into taller trees. Now the order of precedence is reversed. Yellowbelly in lead. Whitestarts repeatedly follow and join Yellowbelly. Blue & Black f ———> group. Blue & Black f ———> Yellowbelly. All birds ranging 20-40 ft up. PL's seem to have disappeared. Whitestarts flycatching. Both species tanagers feeding on buds and/or small berries. Group quiet now. Only "ca"s. Then group disappears. Apparently went uphill.

It is getting colder 9:24 a.m.

See a single footy thrush alone. And then another.

9:55. Cloud cover getting lighter. Followed by a slight increase in bird noise. But not much.

PT

Little 1993

Then suddenly see big mixed flock. Coming down hill. Obviously largely the same as big mixed flock seen just after dawn. I cannot get very good view of the flock now, but it certainly includes at least the following birds now: at least 2 Pseudospingus, 2 Sittes, 1 or 2 PL Atlapetes, 2 Yellowbellies, 1 Flycatcher LXXXXI, 3 Yellow-faced Whitestarts, 1 or 2 Basilantonus and/or Hemipungus types (unidentified), 2 Plum-capped Tachys, and a few others (see below).



(63)

Thus the flock (or at least the nucleus of the flock) seems slightly smaller than earlier. Presumably various individuals have been "splitting off" in the course of the morning. The individuals within the flock also are much more dispersed now than earlier. Earlier, individuals often were only a few feet apart; and none was further than 20 yds from its nearest neighbor. Now some individuals are a 100 yds from their nearest neighbors. Nevertheless, the flock still seems to be quite coherent, insofar as all the birds are moving rapidly in the same direction. With obvious following reactions.

In general, the flock also is much quieter now than earlier. A few bursts of song by several individuals (as below); but otherwise only "CN"s and "PN"s at only moderately frequent intervals.

*Sitta* The Pseudospingus definitely in lead (apparently throughout). When flock first seen, the Pseudospingus were being followed directly by the Sittas. And the two species stayed close together for some minutes afterwards. Pseudospingus in tree-tops. Sittas in tree-tops or just below. Later the Sittas appear to have left the immediate vicinity of the Pseudospingus. But they still remain high in trees. In fact, both species remain within the range 25-40 ft up throughout the whole of my observations of the flock in its second "appearance".

After the Pseudospingus and Sittas, come the PL(s), XXXXX, Y, Clear bellies, Plush-capped Finches, and Basileuterus and/or Hemispingus types. I am not able to determine their exact order of precedence. Probably changing from time to time. The Basileuterus and/or Hemispingus remain low in thick scrub, 1-4 ft above ground. The Plush-capped Finches also stick to scrub. Show their usual preference for bamboo. 3 -



10 ft up. The Yellow bellies and ~~XXXX~~ are medium in "elevation" as well as sequence. Range 5 - 20 ft up, in both bushes and trees. The PL(s) range 2 - 35 ft up, thru all types of vegetation.

The 3 Whitestarts definitely living up near of group. Tend to stick to second growth scrub, 3-5 ft up. At least once, they fought among themselves.

190 When flock first appeared, 1 or 2 Sooty Thrushes went toward it. And moved rather erratically around its outskirts. But apparently they did not stay with it. (The behavior of these Thrushes, in fact, was somewhat reminiscent of "escorting" by *Diglossa* spp.)

17A The flock passed thru an area where I have seen PR(s) on earlier occasions. And just as this happened, I saw a pair of PR's in very low second growth scrub, 6" - 3' above ground, more or less sight under the other birds. Apparently, however, they did not follow the flock when it eventually moved on. This is in striking contrast to the behavior of the PL's. The PL's certainly did follow the flock. It is my general impression that PL's are much more strongly allo-gregarious than PR's. (This may be of some theoretical importance in connection with my hypotheses. The PR's here seem to fill much the same ecological niche as the rufinucha a in the Quito region. If the PR's here are less gregarious than in some other parts of the Andes, such as the Eastern Cordillera — which seems possible — then their behavior may be compared with that of some species of tanagers and other birds which are non-gregarious in the Quito region and less gregarious here than elsewhere.) The only effect that the presence of this flock seems to have on the PR's is to cause them to "expose" themselves, presumably moving around a little more actively than earlier and



probably rising a little higher in number. I did not see the PR's this morning when flock was not around, but I imagine they were there somewhere. The PR's may "expose" themselves either because they are "tempted" to join and follow flock and/or because they want to "erect" the flock out of their territory. ✓ 13

July 1911 A Laf and a Cy certainly were with this flock part of the time.  
Never seen together. But the relations between Diglossini appeared to be so  
somewhat complicated.

*Sitta*  
*Sitta*  
*Sitta*  
First, the *Sittas*, after they left the immediate vicinity of Pseudo  
sungus, were seen feeding on pink flowers of vine or tall bush growing  
up trunk of tall mature tree. 30 ft up. This is the same species of plant on  
which *Saf* fed a few days ago. *Sittas* apparently getting nectar from flowers  
sticking bills into cups. Then *Sittas* disappear from my view. A very fe  
w seconds later, a *Saf* appears in exactly same area. Feeds on flowers.  
Perhaps exactly same individual flowers. Apparently cutting into bases co  
rollas in usual *Diglossa* style. Then *Saf* disappears from my view. A  
few seconds later, both *Sittas* back, feeding on flowers as before. All 3  
individuals apparently silent throughout this episode. (Probably I was  
too far away to be sure of hearing "CN"s or similar notes; but certainly  
none of the species sang at this time.)

This incident is important for 2 reasons. It shows that Setters and Loops do compete with one another. It also suggests that they have a mutual avoidance - inhibition relationship!!!

Settis eventually disappear from sight (again). A couple of minutes later, I hear Laf Singing about 100 yds away. Go to look for it. Can't actually see it, but it obviously is in mature tree 20-40 ft up.



*Cy* Presumably hidden by intervening vegetation. Then I see *Cy*, 20 ft up, feeding in same tree. Apparently looking for insects. I think this *Cy* cannot be more than 20 ft away from *Laf* while the latter is singing. *Cy* remains silent. Whitestarts (not very close by) also are silent at the time. Then *Laf* shuts up. I imagine that it probably flies away to another tree or bush. A minute or so later, *Cy* sings a few phrases. Whitestart is still silent. Then *Cy* shuts up. A minute or so later, Whitestart(s) sing(s) a few phrases. Then shuts up.

Apparently mutual inhibition of song is operative within the Diglossini Social Complex here at this time!

*Sittis*  
*Laf*  
*Cy* The *Sittis* certainly follow flock when it eventually moves off. But I think that the *Laf* and *Cy* do not. Some minutes after end of song, I see a single bird, apparently *Laf*, fly in opposite direction from rest of flock. Into low scrub, where it disappears immediately. A couple of minutes after this, I see a single bird, apparently *Cy*, fly into same bush. Also disappears.

*Sittis*  
*Laf*  
*Cy* *Sittis* and *PL*'s may have much the same relationship to flocks here. While the relationship of *Laf*(s) and *Cy*(s) to mixed flocks may be much the same as that of *PR*'s.

SEE ALSO TODAY'S NOTES ON MIXED DIGLOSSINI

*XVII*  
*171*  
*Sittis* This flock eventually disappears down hill. So I go walk along the road a little. At 10:35 a.m., 500 yds away, I come across a small group of birds which apparently is an entirely different flock. Includes at least 1 *B. luteoviridis* (this is approximately same area where same species seen earlier this morning), 1 *PL* *Atlapetes*, 1 *Sittis*, 2 Whitestarts. *Sittis* in low scrub and small tree 5-25 ft up. *Sittis* is



(72)

acts off leaves. All other species in scrub 5-15 ft up. Group quiet and moderately dispersed. No obvious indications of leadership.

Leaving 10:50 a.m.

COMMENTS:

I. Inter-specific fighting may be another indication that some of the species here are trying to "break out" of mixed flocks.

Thus, the mixed flocks here, although as large and as highly developed as in any part of the Andes, may show a variety of signs of "incipient decay".

II. The Pseudospingus here (where flocks are common and large) seem to be more strongly passive nuclear than in the Eastern Cordillera (where flocks are less common and/or smaller, on the average). They may be compared with the BCBT's of Chiriqui (where flocks also are common and large). The Pseudospingus of the eastern Cordillera, on the other hand, may be compared with the BCBT's of various parts of the northern Andes. Both species probably illustrate the same general "processes".

Passive Nuclear  $\rightleftharpoons$  Active Nuclear  $\rightleftharpoons$  Non-nuclear.

May 25, 1965  
Papayañ

Going to work along small stream not far from Cauca. (The forest site at the level of Papayañ at which I began work the week before last.) Arrive 5:18 a.m. Still quite dark. Sky partly cloudy. Fairly cool (for this altitude).



First few bird sounds 5:23 a.m. Then quite a variety of sounds 5:30. Nothing immediately recognizable. Some DC.

See single CYR alone 5:48. 20 ft up in tree. Apparently looking for insects. Silent. Some Thraupis also flying about alone.

6:03 ♂ & ♀ Ramphocelus in top Guaro tree. ♂ utters ♀-R type pattern. Voice apparently "hoarser" than that of Yellow-rump. Both birds put bills into Guaro flowers. Getting nectar??? BT lands in same tree, 10 ft away from the Ramphocelus. The 2 species seem to pay no attention to one another. BT flies on immediately. Ramphocelus flies on some minutes later.

Same tree also is full of hummingbirds chasing one another.

Then all hummingbirds disappear at almost same time. Are they going around in groups???

See pair BT's alone. Silent. 20 ft up in tree-top.

2 Whitestarts flying alone. One chasing the other. Slate-throats?

Group 3 or 4 BT's moves thru tree tops. Definitely alone.

See single slate throat alone. 30 ft up in tree.

6:28. Single ♀ Ramphocelus alone in tree-top.

6:42. See group 4 CYR's alone in tree top. Then see single "Pale-vented Thraupis" alone, low (5 ft up), in another tree.

Hear first BT song 6:59. It is obvious that this species is not in breeding condition here now. Nor are any of the other tanagers as far as I can determine.

See ♂ Ramphocelus alone (again). Then see single slate throat again. Now but definitely alone. Also more BT's and CYR's alone. Then see single adult T. hawaii perched alone top dead tree, 20 ft up.

7:45. Lots more BT's and CYR's alone.



Bari?

Then see 1 adult bernei, 1 juv. same species, 1 "Pale-vented Thrush" and 1 presumed ♀ Bari, all in same tree. 10-15 ft apart. None of the species paying any obvious attention to any other.

Leaving 8:05 a.m.

This morning's observations would seem to confirm my previous impressions of this area.